APR 20 1934

TY-NINTH YEAR OF SERVICE TO THE METAL WORKING INDUSTRY

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# THE IRON AGE

DUCTION -:- MANAGEMENT APRIL 19, 1934 PROCESSES -:- NEWS


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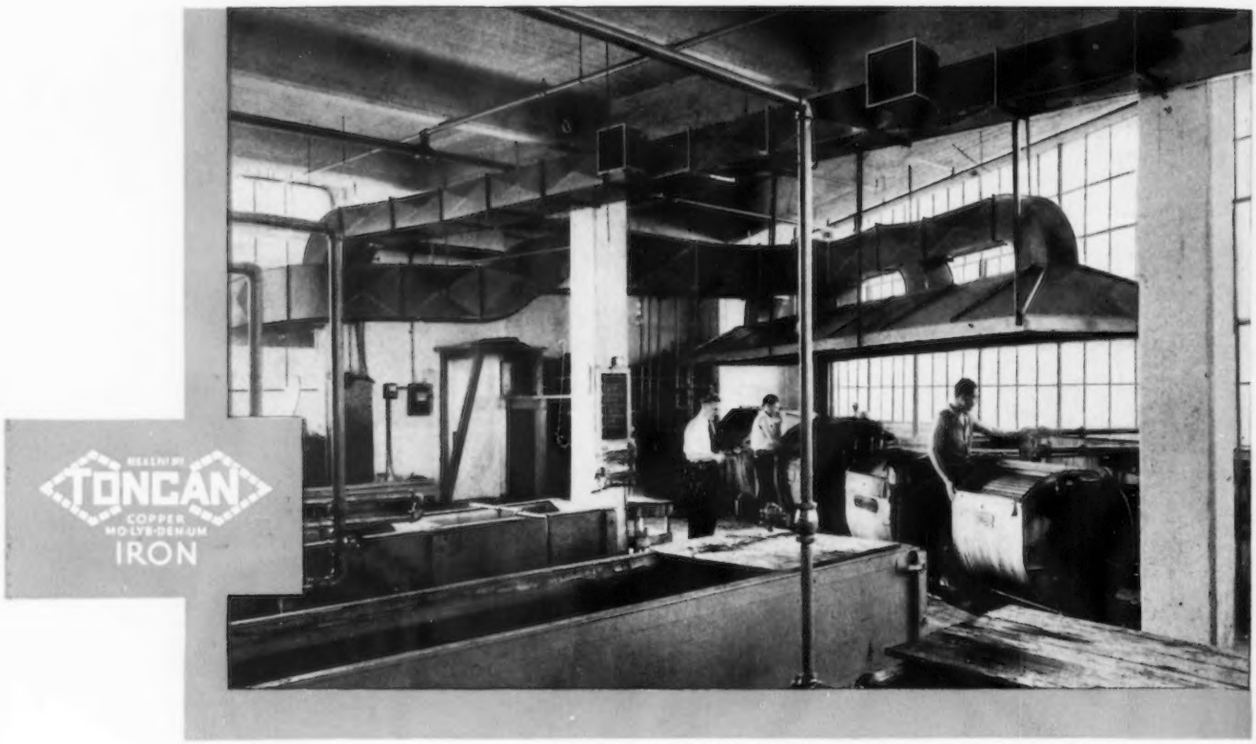


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APRIL 19, 1934

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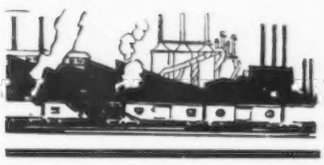
# Industry Is Learning To Talk



INDUSTRY has been handicapped in the court of public and political opinion because it has been inarticulate. Now it is learning how to talk.

One observer of considerable acumen points to the exact period when industry found its tongue. It was during the five days of discussion which accompanied the recent meeting of code authorities with NRA officials in Washington.

During the first hours of the sessions, according to the observer, industry was hesitant to speak its mind. Eventually, however, after the ice was broken by an unabashed and outspoken industry spokesman who exposed the fallacies of the short work week panacea, the gift of tongues descended upon the meeting. Before the sessions were over, industry had stated its position and its problems clearly, frankly and convincingly.

Again, before the Senate Labor Committee, industry became articulate with respect to the Wagner Bill and made perhaps the best interpretation that has as yet been offered to legislators of the social soundness of the "open shop" idea.

INDUSTRY has largely had itself to blame for the lack of public and political understanding which has resulted in unfair and unfavorable comment and legislation. It has gotten in bad by holding its tongue. Industry's critics and its enemies have not practised the same policy.

Has it paid industry to combat argument with argument? Ask the American Federation of Labor, now rudely awakened from its rosy dream of unionization through Government compulsion. Ask the manufacturers who have been relieved of the apprehension of a disastrous 30-hour week.

Industry has always had a strong case, but has failed to take the pains to state it. Perhaps it did not know how. Having learned how, and having seen the quick results which have followed, it will never again remain silent. Men of deeds now know the fallacy of the adage that deeds speak louder than words. They realize that, at last, they must take the public into their confidence before they can win public confidence.

# *Experimenting*

# With Dies Promises Improvement In Wire Manufacture

ADVANCES in wire manufacture are expected to come first from a redesign of dies. Two years ago in these pages (THE IRON AGE, April 7, 1932) Kenneth B. Lewis was rather positive that this would be so. He evidently had in mind that the changes he envisioned would be in most cases a consequence of new die forms rather than that they would be developments made independently of any consideration of the die.

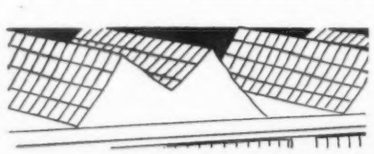
In that earlier discussion, he stressed the need of a rational analysis of the forces operating in a die and made a strong plea for American industry to support research in the subject. In the interval since then he owns to a realization that "while I had been appealing to the general public for some years to develop formulas to account for die stresses, so that the various factors could be properly evaluated and helpful experiments planned, I had not set a proper example." He felt, he said, that he was not qualified to undertake this work but it occurred to him that others might feel the same way about themselves. Accordingly he has now consented "to attempt to formulate some theory, however faulty, and set it up where it could provoke discussion."

The subjoined explanation of his theory of die stresses is now offered as a basis for study and comment by the industry here and abroad. It is presented in the informal way in which he told it to THE IRON AGE. Here is his thesis:

### What Occurs Within the Die

WIRE is obviously deformed in the die; it yields there to the induced forces. It must, therefore, have been stressed to its yield point. It cannot be stressed beyond this point, for it will flow as soon as the yield point is reached.

This gives us a definite unit stress as a starting point, and you will say that we seem to have got off to a good start. It must be pointed out, however, that we are in a sense shooting at a moving target. We are measuring stresses in that portion of the wire which is in contact with the die wall. The wire is suffering cold work and its yield point is rising. We cannot even assume that the mean yield point is the arithmetical mean of the yield points of the drawn and undrawn wire. The physical properties of wire are unstable. Its tenacity is decidedly lower while it is in process of flowing than at any subsequent time. The yield point rises quite rapidly during the first hour after cold work. After 24 hr. its rate of change is very low, but the change can be traced for months by careful testing. A curve plotted from test data indicates that changes in the first small fractions of a second are of considerable magnitude and that the wire in the throat of the die is yielding under a lower stress than any subsequent test will show.



There is luckily a rather crude way to estimate the actual yield point in the die throat. Wire subjected to too heavy drafting will break in the throat, or, just failing to break it will "suck down" in diameter. It starts to break, but as it gets out of the die its tenacity rises, and the "necking" is transferred back toward the die in a steady progression so that the entire bundle of wire is uniformly smaller than the die orifice. If the die pull which caused this sucking has been measured and compared with the breaking strength of the wire 24 hr. after drawing, it is found that the yield point at the die exit is about 85 per cent of the stable breaking strength.

Now the question arises, over what area is this unit stress operating. This is, of course, the area of con-

tact between wire and die, and it will vary for a given job as the die angle varies. It will be convenient therefore to express it in terms of the die angle. This area is that of the curved surface of the frustum of a cone, and is $\frac{\text{A-a}}{\sin}$, where $A$ and $a$ are the bases, that is, the diameter of the wire before and after drawing, and sin is the trigonometric sine of half the die angle. (In all these die calculations it is the half angle which is significant). It appears, therefore, that the sum of the forces acting in the die and deforming the wire is expressed as $\frac{\text{A-a}}{\sin} m\ y\ p$ (mean yield point).

You will object that while this is undoubtedly correct these forces are acting at right angles to the die wall, tending to split the die, and that as we are not aiming to split the die this total is of merely academic interest. You are quite right. What we want is the component in the direction of die pull. If this job is laid out as a stress diagram, as in Fig. 1, it will be seen that the horizontal component of this total deforming force bears the same relation to the total force as the sine of the half angle to its radius. That part of die pull chargeable to deformation is $\frac{\text{A-a}}{\sin}. m\ y\ p.$ sin, and as the sines refer to the same angle they cancel out, and leave $(A\text{-}a)$ $m\ y\ p.$

## Pull to Produce Deformation Independent of Die Angle

It will not escape your notice that in this final expression there is no term relating to die angle. Your inference is correct that the die angle is of no significance in determining that part of die pull due to deformation. It seems a little odd, but I believe I have proved the point experimentally.

Actual examples calculated on this basis show that the horizontal component of the deforming force is considerably below the measured die pull, in fact about half, and you will wonder whether the very large remaining fraction can be friction. It is, and it can be calculated.

The friction is clearly dependent on total pressure between surfaces and on coefficient of friction. The total pressure we have determined as $\frac{\text{A-a}}{\sin}. m\ y\ p.$ Multiply this by $cf$ (coefficient of friction) and we have the total friction. This frictional force is operative along the die walls, and as we are interested only in its horizontal component we must turn again either to graphic lay-out or to trigonometry. It is readily seen (Fig. 2) that the horizontal component of friction is nearly equal to the total, and that it corresponds in fact to the cosine of the half angle. The expression for that part of die pull chargeable to friction is $\frac{\text{A-a}}{\sin}. m\ y\ p.\ cf.$ cos.

The trigonometric terms can be shifted to read $\frac{\cos}{\sin}$, and since the cosine divided by the sine is always equal to the cotangent, the expression is simplified to $(A\text{-}a.)\ m\ y\ p.\ cf.$ cot.

## Friction Accounts for Large Part of Power Needed

You will observe that as we have expressions for the horizontal components of both the deforming force and the frictional force their sum should give the die pull. Quite right. The equation reads $D.P. = (A\text{-}a.)\ m\ y\ p. + (A\text{-}a.)\ m\ y\ p.\ cf.$ cot. This can be factored, and in its simplest form it reads $D.P. = (A\text{-}a.)\ m\ y\ p.\ (1 + \text{cot.}\ cf.)$. The term in the sec-

KENNETH B. LEWIS, whose classic forecast of marked changes that are coming in wire manufacturing processes appeared in The Iron Age of April 7, 1932, is responsible for the accompanying informal discussion of the mathematics of wire drawing. In essence the article is a summation of replies to questions arising out of a conversation on a formula he had derived. This formula essays to evaluate the forces acting in a wire-drawing die, but more than that, it carries many implications of promising modifications of wire making practices. Much of value should result out of experiments which his observations suggest. Mr. Lewis is now practising as a consulting specialist in wire mill problems, having recently opened an office at 17 East Forty-second street, New York, in addition to his headquarters at 43 Midland street, Worcester, Mass.

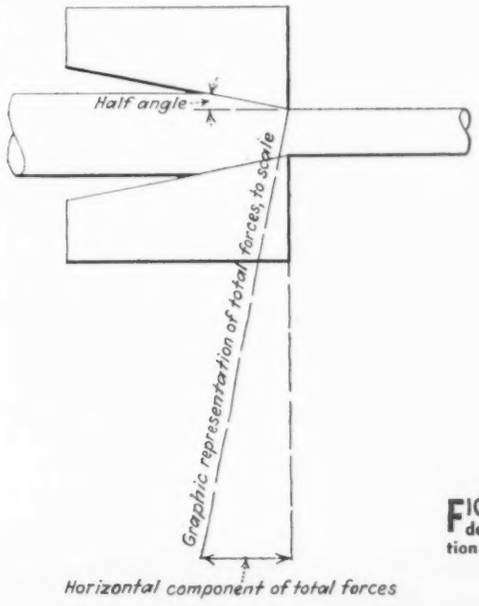



FIG. 1—The horizontal component of the deforming force in the wire-drawing operation may be shown to have a value independent of the die angle.

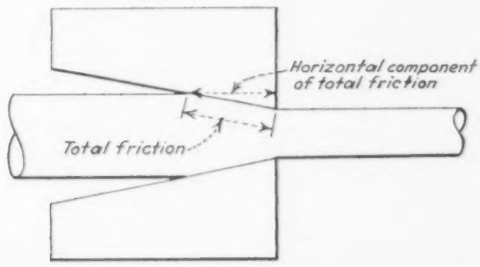



FIG. 2—The horizontal component of the friction (in the direction of the die pull) is nearly equal to the total amount of the friction.

ond parentheses is the factor by which deforming force is multiplied to allow for friction, and its numerical value ranges generally between 1.25 and 3, rising in many cases to 4 and 5. Looking over the whole field of wire practise it is probable that one-half the power input to wire machines is chargeable to die friction.

This will doubtless surprise a large percentage of wire men. It fully justifies, I believe, my eagerness to have these stresses analyzed, for the first step in the attack on any loss is to find some way to measure it.

### Wire Drawing Obeys Laws of Dry Friction

ONE thing that will probably catch attention is that in setting up an expression for friction I have used as a direct factor the total pressure between the surfaces. This is in obedience to the laws of unlubricated friction, and yet do we not lubricate wire with the utmost care? Paradoxical as it may seem, wire drawing obeys the laws of dry friction. My discovery of that fact was no brilliant *tour de force* but simply the realization after weeks of struggle that the laws of lubricated friction fail to explain wire drawing. On careful thought, remembering that lubricated bearings seldom carry more than 500 lb. per sq. in., that the maintaining of a film at 5000 lb. is considered a miracle, how can we expect to lubricate a bearing whose unit pressure ranges from 75,000 to 300,000 lb.

Accepting wire drawing as a metal-to-metal contact under such pressures, you will wonder how cold welding or "seizing" is avoided. The fact is that we are not measuring the friction of metal on die, but of soap on die. We build up with great care a series of coatings on our steel wire; first a corrosion product rooted deeply in the steel, then a lime coat entangled with it, then a film of soap packed into the porosities of the lime. These three coats are keyed to each other and to the steel base. The soap is drawn—the steel goes along with it but never touches the die.

Returning to the basic formula: $D.P. = (A\text{-}a.)\ m.\ y.\ p.\ (1+ \cot cf.)$ you will perhaps observe that there are really two unknown terms in it, $m\ y\ p$ and $cf$. You note that I have assigned an estimated value to $m\ y\ p$ and you wonder about how $cf$. works out, and whether there is any way to get a more accurate determination of either of these factors. Coefficient of friction works out roughly at 0.10 for dry drawing, using an estimated yield point. It is possible, however, to determine yield point with a considerable degree of accuracy. The formula assumes that the duty of stressing the metal from a free state to the yield point devolves on the die. The die has then to size and shape it. These are two pretty heavy jobs for such a small tool, and justify the claim that the wire drawing die is the most remarkable device that man has yet adopted.

### Stressing Metal Ahead of Die

The thought came to me that if the wire could be stressed before it reached the die, the die need only size and shape it. I stressed it in tension by the use of a counterweight and found that the pressure in the die was actually diminished.

This does not mean, as you might first suppose, that the die pull was reduced, for the counterweight is a direct charge on die pull; but the pressure between die and wire is measured in the direction of die pull by the use of a dynamometer in which the die is seated, is progressively reduced as the counterweight is increased. The pressure in the die depends directly upon mean yield point. It is clear that if the counterweight is of such value as to cut the die pressure in half, the counterweight is stressing the wire to one-half its mean yield point. The counterweight is a definite stress acting on a definite cross-section, and has a definite unit value. If a stress of 35,000 lb. per sq. in. cuts die pressure in half, mean yield point is 70,000 lb. per sq. in.

Many sets of determinations, each upon the same wire in the same die with many increments of counterweight, show very steady results for mean yield point, and show it to be at about the arithmetical mean between the actual yield point of the entering wire and 85 per cent of the breaking strength (24 hr. after drawing) of the drawn product.

With one unknown factor thus settled, the other, coefficient of friction, can readily be calculated. It works out, in various degrees of excellence of dies and soap film, between 0.065 and 0.11, running pretty close to 0.085 in average dry drawing practice. It rises slightly as the film thins out with repeated drafts, but rarely exceeds 0.11.

### Why Wet Drawing Requires Light Drafts

In this connection you will perhaps wonder how the friction works out in wet drawing, where the steel, plated thinly with copper out of a sulphate bath, is completely immersed in a soapy or oily fluid which floods the dies. Here, you would suspect, must be something in the nature of efficient lubrication. As a matter of fact I have never found coefficient of friction in wet drawing below 0.13, and often as high as 0.19. It is in fact about what would be expected as between two dissimilar metals under conditions of very scanty lubrication.

There is little doubt that metal-to-metal contact is modified, if at all, by the presence of a film of something like molecular thickness, by virtue of which the operation barely escapes disaster. It is significant that wet drawn wire is highly polished. It can receive a polish from one source only, the polished die, and only by virtual contact. Dry drawn wire on the other hand is relatively dull. The pickled surface reflects, through the thin transparent soap film, its unchanged condition. It has always been known that the bright finish secured by wet drawing was secured at the cost of light drafts. Now it is clear why.

As you look again at the basic formula, $D.P. = (A\text{-}a.)\ m.\ y.\ p.\ (1 + \text{cot. } cf.)$ you will no doubt be impressed by the important part played by the angle. While it does not affect the force required to deform, it does make considerable difference in friction. This is true, though it is perhaps a bit misleading to lay the blame on the angle. The use of the trigonometric functions of the angle is only the handiest way to express the really significant factor, namely the amount of contact between wire and die. This may seem a contradiction, for I have denied that the laws of lubricated friction apply to this problem, and it will be remembered that it is in lubricated friction that the *area* of the contacting surfaces is a controlling factor. For this little confusion we must blame the peculiarity of wire drawing—the die is not only a bearing but a reducing agent, and operates in such a way that the total pressure, the real factor, is dependent directly on total area.

A question which will occur is this: Since the cotangent of the angle decreases very rapidly as the angle increases, why do we not use large angles and cut down the friction load? There are two good reasons. One is that unless a fair length of contact is maintained between wire and die, the wire vibrates, and any latent weaknesses due to segregation or rolling defects develop into the dreaded cup and cone structure. The other is that coefficient of friction, a pretty constant factor within a certain range of angles, rises rapidly when you get on the high side of that range, and the rise is just about fast enough to blank out the savings. Cotangent and coefficient, beyond that normal range, vary in such a way that their product is a constant. This is illustrated in Fig. 3, which is typical, though not an actual, die pull-die angle curve. Nothing is gained by going past the bottom of the curve.

Now that there is a basic stress formula which explains how angle affects die pull, you might ask that we use it to instruct the die maker and wire drawer as to the angles needed to get certain results. In the first place it is not necessary to tell a wire man what angles to use. What we are doing here is holding a post-mortem. We are finding out why the results followed the treatment. What we find out may possibly lead the way into new work.

### Total Contact Area Four Times Entering Section

Since the point is raised, however, I will say that I have deduced, from data gathered over a number of years, a general law to which the work of all die makers and wire drawers conforms within very close limits. There is a constant ratio maintained between the total contact area and the area of the entering section, and this ratio is 4 to 1. In the hundreds of cases I have checked the range is 3.85 to 4.10. If it goes much above 4 the friction load causes breakage. If it goes much below that figure there is a danger of cuppy wire.

You will probably wonder if this rule is not subject to modification for differences between high and low carbon, alloy steels, and metals other than steel. I have not found it so in practice, nor is there anything in the formula to justify the supposition. It is true that angles and bearing lengths vary, but so does the drafting practice, and according to my data the percentage of reduction is the controlling factor in die angle.

In a light draft the angle must be small to get enough contact to give the 4 to 1 ratio. In a heavy draft it must be large, to avoid exceeding that ratio. If a metal is so hard as to threaten to pean out or crumble away the die orifice, a longer cylindrical bearing is used, but it will be found that in such case the angle is modified so that the contact area is still no more than 4 times the area of the entering section. Of course when the cone of the die is thus modified by a terminal cylinder upon whose walls the wire bears, the angle value used in calculation must be modified to express the area of the combined cone and cylinder. This is a simple problem in algebra. If $\frac{A\text{-}a}{\sin}$ = contact area, then $\frac{A\text{-}a}{\text{contact area}} = \sin$, and in this case the sine is that of the angle whose use would give a perfect cone frustum of the same area as the area of the combination figure under discussion.

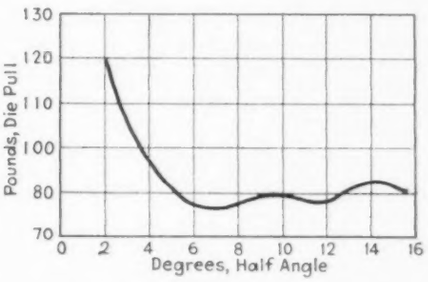



FIG. 3—The total die pull in relation to the die angle shows that nothing is gained by resorting to either small or large die angles.

### Die Friction—An Item for Intense Study

THE question is now reasonable that if advantage cannot be taken of the angle, what good is this formula anyway—and to what does it point, if anything. The answer is: No harm ever results from pinning down a thing of this sort. No new knowledge remains permanently useless. Even if the only result is discussion, it will have served a useful purpose. I think, however, it does point a finger in several directions. There are two vulnerable factors. One of course is coefficient of friction. When the enormous part played by die friction is more fully realized there will be renewed efforts to secure and maintain better films on our process wires. In this problem no contemplation of the formula will be of much help—it is a mill job.

I think, however, that the most vulnerable spot is that little *m. y. p.* I have already stated that the stressing can be done to a large extent outside the die, and that mean yield point can be determined by this method. Why should we not be looking for a technique based on this principle and aimed at lower power consumption, or decreased die wear, or both? A backward drag on the wire does not at the moment seem practical, although it could be used, and I suspect has been used, as a means of inducing metal to fill out sharp corners in dies of intricate shapes.

### Why Not Dies in Tandem?

Some hope lies along the line of dividing a normal draft between two dies in tandem, allowing the first to stress the wire for the second. Bear in mind that wear is a function of friction, friction of pressure, and pressure of mean yield point. If the wire *in the die* has to be stressed only one-half the normal amount, it is probable that die wear will be not one-half, but some much smaller fraction of normal. Some form of stress other than tensile might be arranged. Interesting results are reported from the use of rotating dies. The decrease in die pull is probably the result of torsional stresses. I have no specific suggestions but if the idea is tossed into the arena somebody is pretty certain to pick it up and make it profitable.

Perhaps the Steckel mill may be regarded as working along the same principle and in that case may perhaps give some hints as to technique. The idea of spooling process wire under heavy tension, however, does not appeal to a wire man.

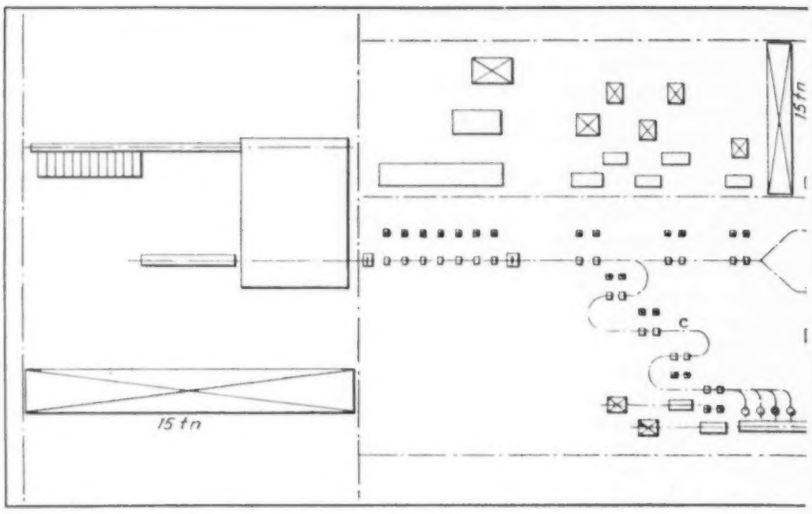
There is yet another direction in which our basic formula points. The general statement may be made that wire drawing is made possible by virtue of the difference between the yield point of the undrawn wire and that of the product, which must have tenacity enough to support the tensile pull which sets up all the stresses. A draft of too great severity results in a broken lead, chiefly because of the great influence of *m. y. p.* on both deforming and frictional forces.

### The Case of Hot Drawing

If the wire could reach the die at a red heat its yield point would be extremely low—say 5000 lb. per sq. in. Chilled by contact with the die, it would emerge with a tenacity per-

*(Concluded on Page 74)*

# Wire Rod Mill Pro




By I. G. KONSTANTINOV

NEW types of wire rod mills have been discussed in Gimpomez (State Institute for Metallurgical Works Designing, Leningrad) in the effort to establish a standard wire rod mill for new works that are to be built in U.S.S.R. A comparison was made, for example, of both the continuous and Garrett mills, and the following items were taken into consideration:

a. The working crew.
b. The maximum weight of bundle feasible,
c. The section uniformity of both the initial and final end of the rod,
d. The power consumption per ton of material rolled,
e. The accuracy of rolled section,
f. The cost of the mill,
g. Mill capacity.

### The Rolling Mill Crew

The following are some of the findings:

A continuous mill requires much less skilled labor to operate than a Garrett mill. The continuous mill itself is served by two to three boys, and the whole crew consists of 20 workmen, including the furnace man, heaters, workmen in stockyard, etc. To operate the Garrett mill a crew of 32 men is necessary with 9 to 12 skillful rollers and catchers among them.

It is difficult to get skilled operators for the looping mill. Ten years are required for one to become an experienced roller at wire rod mills. Such operators are rather rare and, therefore, are paid at high rates.

### The Bundle Weight

Since the finishing train is hand operated the rolling speed is limited and cannot exceed 9 meters (30 ft.) per sec. As rolling speed is low in the last stands of the Garrett mill, great losses of heat take place there, these losses being intensified by the long loops sliding on the ground plates. The rolling speed in the last stand of the continuous mill is considerably higher and reaches 22 to 23 met. (70 to 75 ft.) per sec. Therefore the bundle weight rolled in the Garrett mill is far lighter than that rolled in the continuous mill.

A bundle rolled in the Garrett mill weighs 90 kg. (200 lb.), and that rolled in the Garrett-Cromwell mill with two stands to the finishing train can reach 136 to 138 kg. (300 to 305 lb.). The high peripheral speed of the continuous mill rolls admits of 200-kg. (450-lb.) bundles without trouble, and the outlook is for 270 kg. (600 lb.) ones. A greater weight of bundles makes for better use of the mill and more convenience at the wire drawing bench, where long wire reduces the number of welded points.

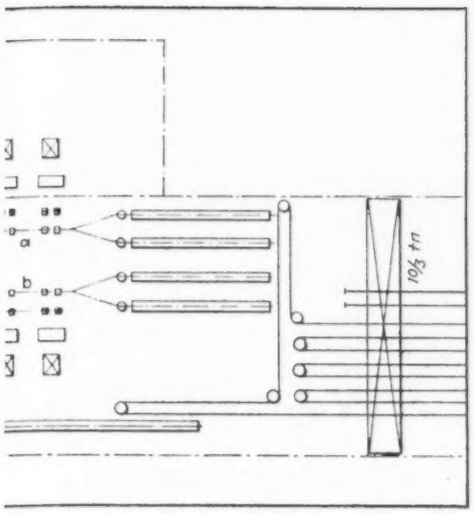
### Uniformity of the Rod

Wire rod rolled in the Garret mill has different gages as regards the first compared with the last end, because there is considerable difference in temperatures, one compared with the other. Often the last end of the rod is running with a fin, while the first one is round or a little oval, as the pass is insufficiently filled. This phenomenon decreases noticeably if wire rod is rolled at the high rolling speed of the continuous mill. Moreover, with the rolls placed so closely together as they are in the continuous mill, exposure of the hot metal to the air is slight; also a given billet may be at one time partly in the furnace, partly in the mill and partly in the reel.

### Power Consumption

The rolling process in the continuous mill is going at a higher temperature than in the case of the Garrett mill. Pihl (Stahl und Eisen, 1929, No. 38, p. 1373) gives a diagram comparing the temperature of 6 mm. (0.236 in.) diameter wire rod rolled in the continuous mill with that of rod rolled in the semi-continuous mill. With equal initial temperatures in both cases, 1100 deg. C., final temperature of the rod in the first case was 980 deg. C. and that of the last one, 840 deg. C.

Since the length of the roll barrel in the continuous mill is less than that in the Garrett mill and the number of roll rotations in every stand is independent of these in the preceding stand, a smaller roll diameter can be taken for the continuous mill as compared with that of the Garrett mill. Smaller diameter rolls in the continuous mill and higher rod temperatures reduce the power consumption per ton




Semi-continuous wire rod mill designed to carry four strands simultaneously

# posed for the U. S. S. R.

Giprostal, Charkov, U.S.S.R.

of material rolled. On the other hand large friction losses in additional pinion stands and reduction gears cause additional power consumption. The result is that if like billets are rolled and the mills are loaded completely, the power consumption per ton of material rolled is the same in both the continuous and the Garrett mills.

## Cost of the Mill

The number of roll stands and pinion stands in the continuous mill is more than that in the open mill. If a number of stands of a continuous mill is driven from one motor, a powerful reduction gear is required. In case of separate motor drives, reduction gears can be avoided but the number of driving motors is increased considerably. On the whole it is somewhat more expensive to build a continuous mill than a Garrett mill but these additional expenditures are balanced by lower labor charges.

## Semi-Continuous Mill

The output of a continuous mill running two strands reaches 17.5 to 20 tons an hour. The output of a Garrett mill with continuous roughing group (semi-continuous mill) amounts to 22 to 25 tons an hour.

The semi-continuous mill has enabled the Garrett looping mill to raise its output but its chief shortcomings have remained. The consequence of considerable looping is lessened bundle weight and some variation of gage of the rolled rod. The cost of the train has risen; and the size of the crew is not materially lessened as compared with the Garrett mill, because semi-continuous mills require workmen to operate the continuous roughing group as well as skilled rollers for the finishing stands. However, the increased capacity of such mills and the ability to control easily the finishing stands have contributed to their popularity.

## Standard Wire Rod Mill Proposed

A comparison of semi-continuous and continuous mills brings us to the conclusion that the continuous mill is more advantageous in all respects but its capacity is lower than that of the semi-continuous mill and this constitutes its short coming.

The roughing group and reheating furnace that without difficulty can be built of a capacity of 45 tons an hour are not fully used in the continuous mill. The neck of the bottle of the continuous mill is the finishing stands group. To enlarge this neck the author has proposed to arrange the stands according to the scheme given in the sketch. The mill so arranged can run four strands simultaneously instead of two strands rolled now in the continuous mill. The group *a* and *b* run one strand respectively, while group *c* takes two strands.

The roughing group and reheating furnace are used fully if a train so arranged is installed. An expansion of mill capacity of 75 to 100 per cent is the result of the relatively nominal expense of installing eight additional finishing stands. Building cost would be raised insignificantly under the proposed design.

The following summary covers the equipment necessary, including the additional finishing stands, applying it to the semi-continuous wire rod mill to be erected at the Magnitogorsky works, U.S.S.R.:

| | Weight, Tons, |
|---|---|
| 1. Loading skids, furnace charging table, pusher, pinch rolls, etc. | 141.2 |
| 2. Furnace binding, door frames, hearth bars, burners, etc. | 98.8 |
| 3. Furnace discharge table and hot shear | 32.7 |
| 4. Roughing continuous train, 1-6 stands, pinion stands, reduction gear set, couplings, flying shear, etc. | 251.59 |
| 5. Roughing stand 7-8, pinions, reduction gear set, etc. | 74.7 |
| 6. Finishing stands 9-10-11-12, reduction gear set, etc. | 27.75 |
| 7. Finishing stands 13-14, reduction gear set, etc. | 23.55 |
| 8. Finishing stands 15-16, reduction gear set, etc. | 23.55 |
| 9. Finishing stands equipment (repeaters, guides, troughs, piping, etc.) | 25.07 |
| 10. Central lubricating system | 15.00 |
| 11. Reels | 16.4 |
| 12. Bundle conveyor | 45.0 |
| Total | 775.31 |

The weights of continuous and semi-continuous mills are equal, or about 775 tons. The weight of eight additional stands with equipment

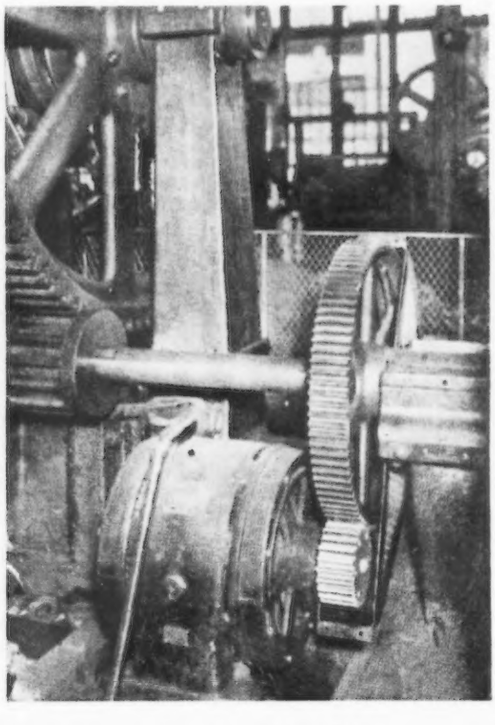
*(Concluded on Page 74)*

# Choosing the Right Drive—10

By WILLIAM STANIAR
Mechanical Power Transmission Engineer
E. I. DuPont de Nemours & Co.

THE open gear method of transmitting power direct from a high speed prime mover is practically obsolete, because of its inferiority to the modern reduction gear unit, chain and V-rope methods. At the time of the introduction of the electric motor, gearing and belting were the only mediums available for converting the high speed of the motor to the relatively slow speed of the application. It was necessary to gear the motor to a head-shaft and in turn gear the head-shaft to the driven machine as shown by Fig. 65. Such an installation permitted a total ratio of approximately 64:1, based on a maximum ratio of 8 to 1 for each gear set. If a higher ratio was desired, it was necessary to install a third gear reduction. This method was noisy based on the use of cast iron or steel gears and was also cumbersome. Such conditions were responsible for the development and introduction of the composition motor pinion and the back-geared motor unit. This consisted of a motor direct spur gear connected to a shaft integrally mounted on the motor base plate, which resulted in an open geared motorized reduction unit with a ratio capacity of approximately 5 to 1. The usual practice was to either belt or direct gear connect to the driven apparatus from the integrally mounted shaft. Noiseless motor pinions are composed of rawhide and various other materials and for the service intended proved satisfactory. However, based on the growing demand for higher reduction ratios, safety features, lower maintenance and higher efficiencies, the reduction gear unit and other methods have rapidly displaced open gearing for direct high speed connection.

Open gearing is employed to a great extent immediately following the first speed reduction from the motor and also adjacent to the driven machine. One installation of this character employing open gears between the slow speed shaft of a herringbone reduction unit and a rotary kiln is shown by Fig. 66. Another



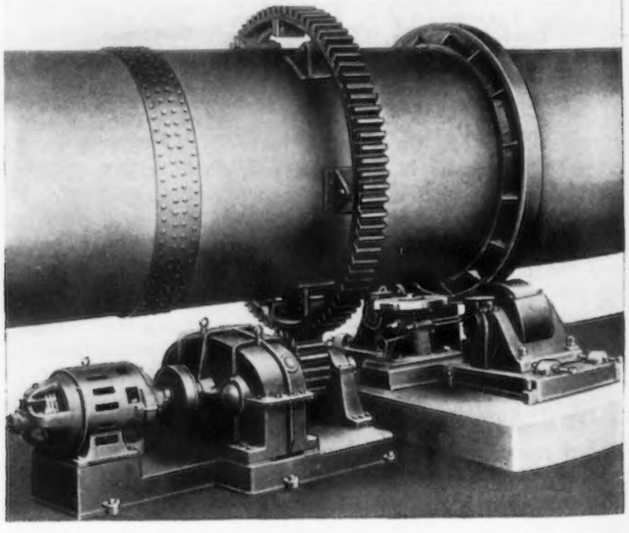


Fig. 65 (at left): Development of improved driving methods and apparatus has practically made the open gear method obsolete.

Fig. 66 (above): Slow speeds of heavy driven apparatus afford opportunities for open gear application.

# The Open Gear Method and Combination Drives

installation, utilizing bevel gears between the slow speed shaft of a worm reduction unit and a rotary sieve, is shown by Fig. 67.

Various forms of open gearing are employed for transmitting power beyond the high speed reduction such as the spur, mitre, bevel, herringbone, spiral and worm, but to consider any one of these for open high speed direct connection is poor economy based on the efficient methods available.

## Uses of Open Gearing

Regardless of the obsolescense of open gearing of any type for direct high speed motor connection, this method of power transference is employed extensively as an integral part of various types of apparatus and as a means of transmitting heavy loads at slow speeds on close centers. The spur gear is probably the most universally employed because of its adaptability to general gearing requirements and its low cost. The cut tooth spur is not as smooth an operating gear as the herringbone toothed gear because the former is purely a pushing action whereas the latter is a continuous sliding motion. Backlash is apparent with the spur and not with the herringbone. In view of this fact the herringbone toothed gear, as shown operating open by Fig. 68, is displacing the straight spur gear where smoothness of operation is essential.

## Bevel Gears

Bevel gears of the regular involute tooth design are employed for right angle and oblique angle driving where the ratio requirements range from over 1 to 1 to approximately 8 to 1. Their use is extensive in process plant driving for both vertical and horizontal installations. The bevel gear can be economically employed as an auxiliary to the group belting or chain method driving a battery of vertical vessels, because of its ability to inexpensively convert horizontal motion into vertical application.

The mitre gear functions in the same manner as the bevel gear with the exception that it operates at 90 deg. and its ratio capacity is always 1 to 1, therefore its chief use is the transference of motion through a right angle with no increase or decrease in speed. Any pair of bevel gears with a 1 to 1 ratio and a 90 deg. angle are termed mitre gears.

The spiral gear is usually employed integral with machine mechanisms based on its variable angle driving feature, smoothness of operation and its ability to perform at high speed.

The open worm gear is employed as an integral part of machine mechanisms and at times for crude slow speed lifting operations, but its general use as a speed reduction method has been entirely replaced by the enclosed worm reduction unit.

The proper lubrication of open gearing is more difficult than the gears of any type of gear reduction unit, but it is just as essential for efficient operation. In spur and bevel gearing rolling motion is accompanied by sliding motion of one tooth upon another, making wear inevitable if proper lubrication is not provided. This sliding or wiping action, which is destructive to poorly lubricated gears, is of assistance in the accomplishment of lubrication when a proper lubricant is supplied to correctly meshing gears, since the wiping action, combined with the curvature of the surfaces, forms an oil wedge to build the oil film. Therefore the real problem is that of providing between the gear teeth a film of lubricant of sufficient strength to withstand the intense local pressures during the period of contact. Film strength is determined by the nature or quality of the lubricant and by its body or viscosity.

## The Combination Method

In industrial driving it is frequently necessary to employ methods of both

### Process Manufacturing Plant Driving

| METHOD | Open gear. | | | |
|---|---|---|---|---|
| TYPES | Spur | Bevel and Mitre | Herringbone | Spiral and Worm |
| SERVICE | Integral with machine mechanisms.<br>All types of moderate and slow speed, light and heavy power driving.<br>Parallel driving only. | All types of moderate and slow speed right and oblique angle driving.<br>Vertical driving of crude apparatus.<br>For light, medium and heavy power driving. | All types of moderate and slow speed driving.<br>For heavy loads and where smoothness is desired. | The spiral for high speed, light power any angle driving.<br>The worm for slow speed crude right angle driving. |
| MATERIALS | Bronze<br>Cast Iron<br>Steel<br>Composition for pinions | Bronze<br>Cast Iron<br>Steel<br>Composition for pinions | Steel<br>Cast Iron | Steel<br>Bronze |
| HORSEPOWER CAPACITIES | Fractional to any practical requirement. | Fractional to any practical requirement. | 5 to any practical requirement. | Spiral = fractional to 2 h.p.<br>Open worm = fractional to any practical requirement. |

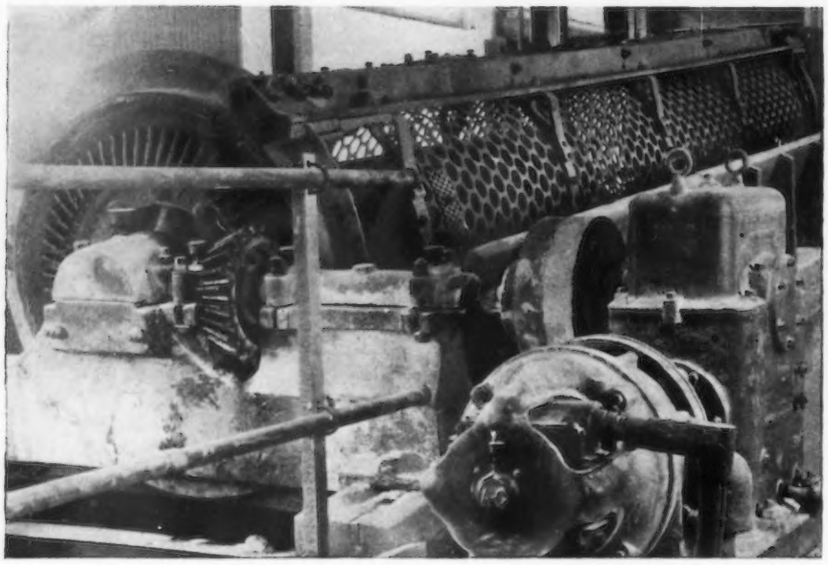


Fig. 67: Bevel gears are used in this instance in a slow speed screen drive.

the flexible and rigid systems of power transmission in combination for one driving installation. This is possible because of the compactness of certain methods of each system and their adaptability to each other.

The usual requirements necessitating a combination of methods are speed reduction coupled with speed variation, flexibility coupled with rigidity and a consideration of first cost saving based on avoiding concentration of the entire speed reduction in one unit. Variable slow speed application is essential in numerous process plant operations and in many instances the driving mechanisms for accomplishing this purpose must act as an integral unit.

A modern unit of this character combining all features mentioned is illustrated by Fig. 69. This unit is positive in its power application as all of the component mechanisms are of the positive type. It is composed of a motor, silent chain, chain belt variable speed unit, single strand finished steel roller chain and a herringbone reduction gear. This makes possible a variable slow speed application from a high speed prime mover in small space. In this particular case the motor operates at 1150 r.p.m. and by the silent chain connection drives the constant speed shaft of the variable speed unit at 734 r.p.m. Through the mechanism of the unit the variable shaft has a maximum speed of 1640 and a minimum of 328 r.p.m. The variable shaft is connected to the herringbone reduction gear by a single strand finished steel roller chain. The reduction gear has a ratio of 52.5 to 1, which furnishes the slow speed shaft of the reducer with a variable speed of 13.1 maximum to 2.65 r.p.m. minimum. The slow speed shaft of the reducer is finally connected to the application by a detachable malleable iron chain. This is a practical example of the possibilities available for solving the perplexing driving problems of the process plant industry. In this installation flexibility is combined with rigidity and the final reduction is comparatively low, therefore the cost of the reduction gear is not excessive.

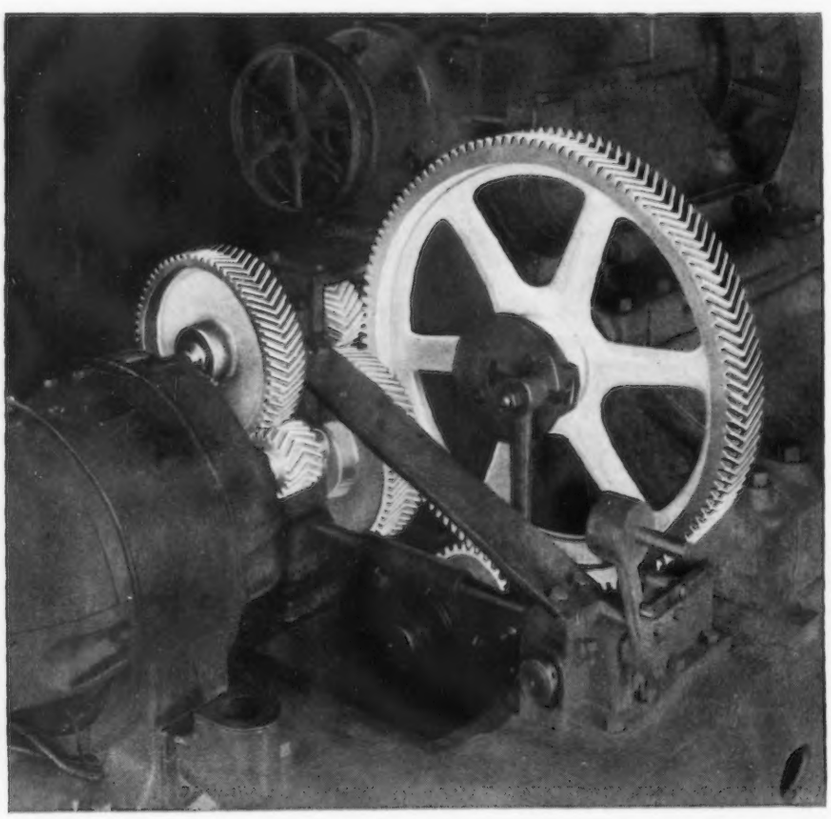


Fig. 68: Where smoothness of operation is essential, herringbone open gear drives are suggested. Modern practice, however, tends toward enclosed drives.

Another installation employing a spur gear reduction unit in combination with a variable speed unit is shown by Fig. 70. This is not an integral unit but it illustrates the ease of combining the various methods so the required result may be obtained, regardless of the location. In many instances speed variation is not required, but flexibility in combination with rigidity is necessary. This can be accomplished by the use of any of the short centre methods combined with any type of reduction gear. A combination such as this not only provides flexibility to a rigid method but it reduces the ratio of the reduction gear and therefore the cost. Assume a 20 hp. installation with a required reduction of 60 to 1 from motor to application. If the motor is direct flexible coupled to a 60 to 1 ratio heavy duty horizontal worm reduction unit the cost of the reduction gear would be $675.00. If the motor is silent chain connected on a 36 in. centre with a ratio of 4.7 to 1 to a worm reduction gear, it allows the ratio of the 20 hp. gear unit to be approximately 13 to 1. The cost of this ratio gear would be $262.00 and the silent chain drive including an oil

retaining casing $98.00, or a total of $360.00 as compared to $675.00 for the high ratio reduction gear. The silent chain connection eliminates the use of a flexible coupling which would add at least $30.00 to the $675.00. It is obvious that a saving of $345.00 should be considered.

### Uses of Combination Method

In production shop driving the combination of methods is usually integral with the machine tools, therefore this phase of mechanical transmission is seldom apparent. In process plant operations the combination method is a necessity based on the difficult driving demands and limited space.

Definite uses cannot be stated because it is a possible combination of the various methods discussed in this treatise for the solving of complex driving problems. Such problems are continually confronting the process industry, but there are very few that cannot be efficiently and economically solved by the methods available either individually or in combination, regardless of the requirements.

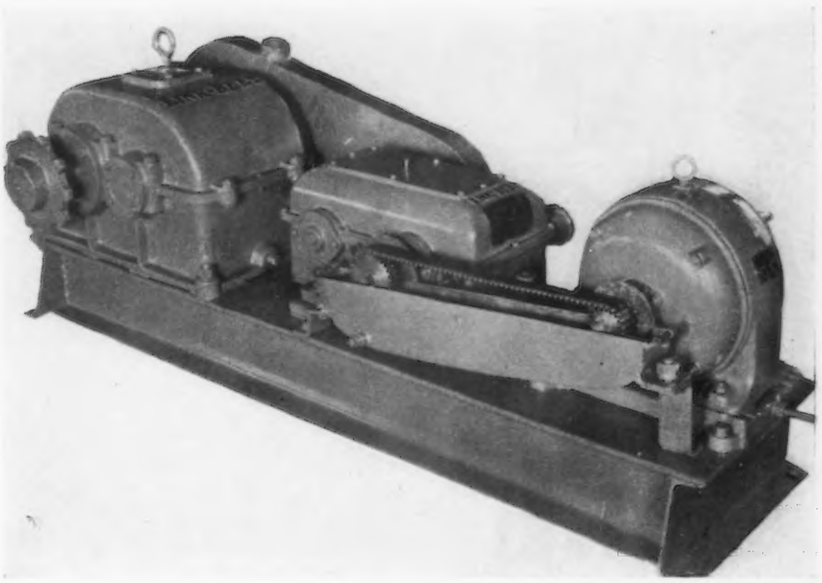


Fig. 69: Combination of the rigid and the flexible systems provide great flexibility of choice of drive.

## Tests of Hot-Blast Stoves

TESTS on two blast-furnace hot-blast stoves were reported by R. D. Abbiss, assistant chief engineer, Edgar Thomson Works, Carnegie Steel Co., Braddock, Pa., to a heat transfer session held during the annual meeting of the American Society of Mechanical Engineers. The results are here tabulated. Stove A was 22 ft. in diameter and 103 ft. high, and Stove B, 22 ft. in diameter and 100 ft. high. Stove A was of the two-pass central combustion type and the other of the two-pass side combustion type. Both were equipped with pressure type burners and the gas used was washed. Stove A was insulated with 2½ in. of Sil-O-Cel brick.

| | Store A | Stove B |
|---|---|---|
| Surface in checkers, sq. ft. | 83,400 | 65,230 |
| Cubical contents of checkers, cu. ft. | 13,400 | 9,167 |
| Ratio of heating surface to cubical contents | 6.22:1 | 7.116:1 |
| Total heating surface in stove, sq. ft. | 87,500 | 66,494 |
| Stove on gas, hr. and min. | 75 and 10¾ | 12 and 8 |
| Stove on blast, hr. and min. | 41 and 17 | 4 and 1.5 |
| Total time of test, hr. and min. | 116 and 27¾ | 16 and 9.5 |
| Heat delivered to stove, B.t.u. | 2,758,359,469 | 210,399,076 |
| Heat delivered to furnace by blast, B.t.u. | 2,119,096,978 | 161,825,778 |
| Heat transfer, B.t.u./hr./sq. ft. of htg. surface | 586 | 605 |

HAVING been accorded written approval by the industry, milling cutter simplified practice recommendation No. R36-34 became effective April 15, according to an announcement by the Division of Simplified Practice, Bureau of Standards. This revision, proposed and developed by the industry's standing committee, effects a reduction in the number of stock sizes and varieties of milling cutters over those shown in the previous schedule.

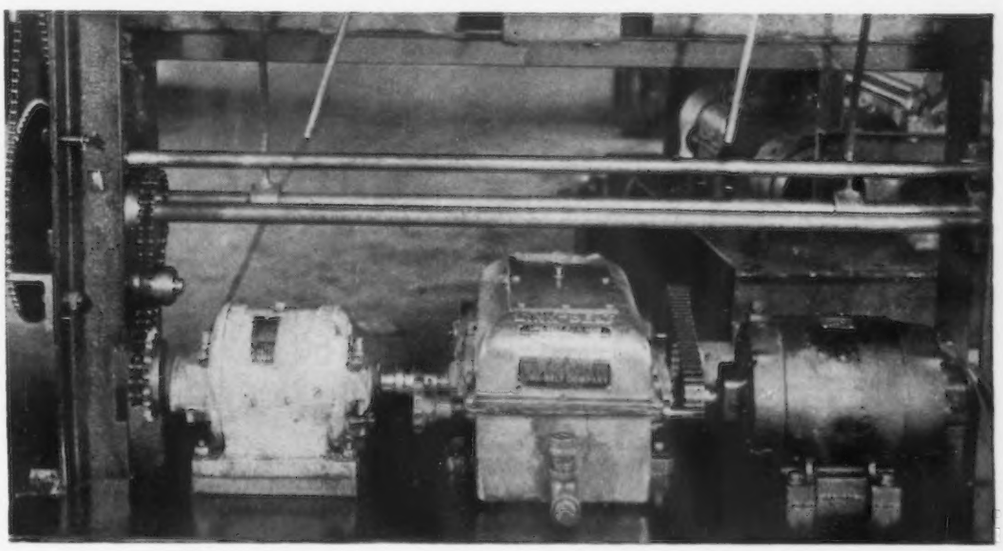


Fig. 70: An example of a combination of driving methods.

# Making the Individual

USING as an example the handling of an order to make a single cast-iron pipe bend, the author would offer methods calculated to keep down the jobbing foundry's costs. A core wrapped with rubber strips of the thickness of the metal walls to be cast is used as the basis of the pattern.

OCCASIONALLY the jobbing foundryman situated close to the delivery point is invited to tender on an order for filler pipe castings of varied design. This may be in competition with established pipe foundries in the local area or at a distance, but the contract terms usually call for rapid delivery at a reasonable price. In many cases, owing to the obtuse angles required in crosses, tees, and elbow designs, as well as the unusual and mixed diameters, no existing pattern is available. The skeleton pattern method is then sometimes resorted to, or, as alternative, the well-known system of striking up the core, adding the metal thickness on the blackwashed body after drying and using the core with fitted wooden flanges for a pattern; the extra sand after molding is stripped from the core, and the mold closed in the usual way.

This system, while fairly satisfactory, entails the handling of two half cores, made and dried separately, jointed afterward and callipered to size; and, in the larger sizes, two sets of cast-core arbors are necessary for every pipe produced, one for each half core.

In certain plants specializing in jobbing pipe, much of the cost and trouble has been reduced by a drastic deviation from established practice, the policy pursued being as hereafter described. A 12-in. 60-deg. radial bend weighing approximately 650 lb., as shown in Fig. 1, is chosen as an example.

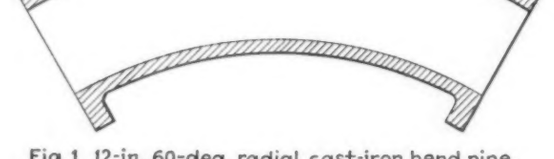


Fig. 1 12-in. 60-deg. radial cast-iron bend pipe, weighing approximately 650 lb.

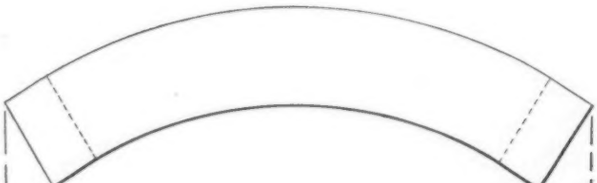
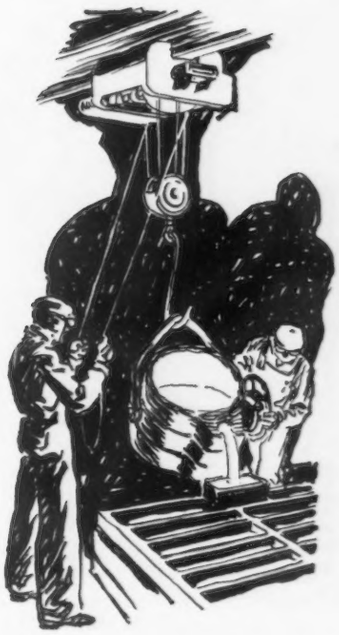



Fig. 2 Core board same size as inside of pipe with six inch allowance each end for core-prints

Instead of the usual sweepboard template following the inner contour of the outside diameter of the pipe at its halfway line, a sheet of heavy wrapping paper the exact size and shape of the inside of the casting required is cut out and sent to the foundry, contraction, of course, being duly allowed for. In the carpenter or pattern shops a rough board is sawed out to the outlines of the sheet of paper, plus 6 in. at each end to allow for coreprints. The board thickness is immaterial, a standard of 1 in., however, being usually maintained to avoid confusion, as indicated in Fig. 2.

The board is laid on a level bed as usually prepared for open sand work, and its outline marked on the sand bed with whitening, parting sand, or the point of a molder's trowel. It is then lifted from the bed, and in the confines of the marked space left, the core arbor mold is stamped in by means of the "dabber" stick generally used for such purposes, the curved prongs following the contour of the pipe being made by a pointed round

# Odd-Size Casting



By J. H. EASTHAM

bar bent to shape and pushed into the bed at the desired spacings.

The extension lugs or short bars at each end of the arbor casting as shown in Fig. 3 are not absolutely necessary, but are advisable when making the larger castings, as, with the help of a belt or other central lifting arrangement, they furnish the three-point contact so desirable when handling the finished core.

When sweeping up the drag half of the core, the template board is laid on a flat plate, preferably machined to guarantee a straight face, about ½ in. or so of core sand is spread all over the board, and the core arbor casting clay washed is laid on the sand face and tapped down slightly before proceeding to ram up and strike off the half core in the usual way. The partly made core is shown at this stage in Fig. 4.

It will be observed that, as the half core is built up on the wooden template, the extra inch depth must be added to the height of the sweep board arch, the sweep being thus 7 in. high, in the form of a 6-in. radius plus 1 in. cut straight, these details being shown in the end view at Fig. 5. The ends of the sweep are cut to a workable slack fit over the template board, or about 12 1/16 in. as the extreme width of the opening.

The half core is next blacked and dried in a pyrometer controlled oven at a temperature not exceeding 450 deg. F., burning through overheating being thus avoided. This is highly important, and in this way the core room loss arising from burnt and broken cores is kept consistently below 2 per cent of the total output.

When dry, the core is pulled out of the oven and turned over, the board being withdrawn. With the core now resting on the plate, flat side up, the upper half is then built up directly on the lower half and swept to shape by a board of 6-in. radius elongated to a height of 12 in., this arrangement and the coke vent laid from end to end being shown at Fig. 6.

The upper half is now blacked and dried at the same temperature as used in the first operation. When cold, the flange patterns are fitted in place, full metal rings being made for the smaller sizes, and slipped on over the core, as in Fig. 7.

The flanges for larger diameters are made of wood in half circles and when set to place can be held by pattern makers' "dog" clamps until ramming has progressed sufficiently to warrant the removal of the clamps without altering the position of the flanges. After the flanges are set, strips of sheet rubber of the same

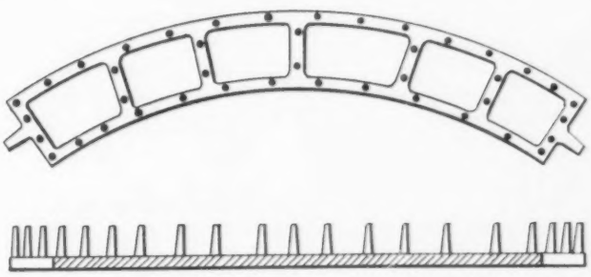


Fig. 3 Cast-iron core arbor for 90 deg. radial bend pipe

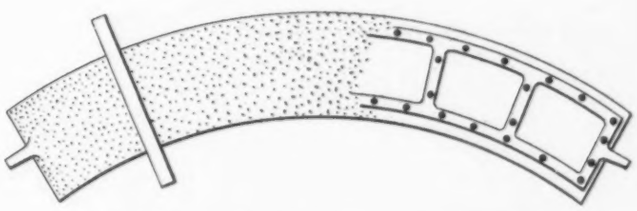


Fig. 4 Lower half core partly swept up on template board

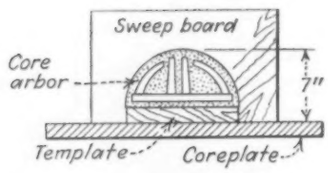



Fig. 5 End view of drag half core, showing sweep board detail

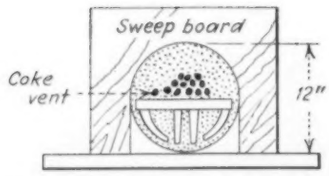



Fig. 6 End view of complete core with sweep board detail

thickness as the casting to be made, are wound around the core spirally from end to end inside the flange patterns, as in Fig. 7. *A* in the sketch shows the rubber tightly wound as in the case of a casting of short length, thus forming a complete pattern, while *B* shows the strips spread out to effect a skeleton arrangement, the interstices being tightly packed with heap sand and scraped off level in accordance with skeleton pattern practice.

The rubber strips may be of any convenient length. A light nail driven into the core through a hole in each end of the strips holds them securely until their removal after the core-pattern is drawn from the sand. A resilient lagging of the kind will accommodate itself to any required diameter, and, with ordinary care, will last a lifetime. When the strips are not in use, they are hung on staples extending from the foundry wall, the various thicknesses being kept separate. The same practice applies to the metal flange rings, each size being hung or piled separately, ready for use at any time.

From this point the job becomes a matter of regular foundry routine, the pattern being bedded into a drag flask or pit, as size or circumstances determine, and the pipes are cast in green or dry sand molds, as size and other circumstances warrant.

As to core sand mixtures, local conditions are, of course, the governing factor, but the best general results are to be obtained by a lining of strong oil sand next to the casting, backed up by a mixture which is bound by a suitable blended dry compound, and wet down with a solution of any one of the regular wet binders or of molasses in water. Tests made in a prominent foundry in New York State with a view to utilizing as far as possible returned sand from the cleaning room, while maintaining core strength and economy in bonding materials, showed that for all round purposes the following mixture gave excellent results, all ingredients by same measure, not by weight:

Fig. 7 Pipe core with flange patterns fitted and rubber stips partly wound prior to molding

| Core Sand Mixtures, Parts by Volume | |
|---|---|
| Sharp river sand | 9 |
| New molding sand | 6 |
| Old floor sand | 6 |
| Cleaning room returns | 5 |
| Dry core compound | 1 |

Fig. 8 draws attention to another feature in the molding of pipe and similar cylindrical bodies, which, certainly in the average shop, does not receive as much attention as it deserves. The casting, in this instance, is molded in an ordinary flat-cope flask, a parting being sloped down from the floor level to the halfway line of the pattern, instead of going to the expense of fitting up a large flask for a single casting.

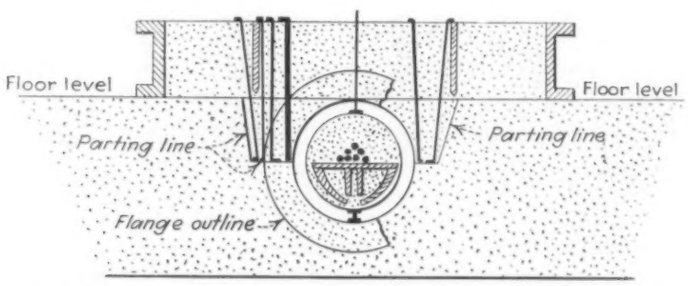



Fig. 8 End section view of closed mold made in flat cope and showing parting details

It frequently happens that the cost of making new arched bars and assembling them in a check or cope frame is higher than the cost of jointing down and laying the extra gaggers in a flat cope part, especially when making a casting of tortuous design, without probability of a repeat order. Hence the advisability of a comparative cost analysis when laying out the equipment.

## P. R. R. Designs New Freight Car Truck

AN entirely new type of freight car truck, insuring easier and smoother riding and better protection to lading, has been designed by the Pennsylvania Railroad and will be applied for the first time on 250 steel box cars now being built by the railroad in its shops. The improved riding qualities of the new truck are secured primarily through the introduction of a new spring arrangement, embodying the use of elliptical springs in addition to the usual spiral springs.

In the new truck the interposition of elliptical springs between the truck bolsters and side frames completely eliminates undesirable vertical harmonics, as they are termed, and provides much easier and smoother riding for car and lading. The springs have the effect of snubbers in controlling vertical motion. The new truck is expected materially to reduce loss and damage to freight in transit, cutting railroad operating costs and saving patrons inconvenience due to damaged shipments.

The elliptical springs for this truck are being made at the Altoona, Pa., shops of the Pennsylvania and the trucks themselves will be assembled and applied to the cars at Altoona.

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The consulting & Research Association, 823 Franklin Avenue, Wilkinsburg, Pa., has been formed by five research engineers formerly employed in the Westinghouse Research Laboratories to provide a consulting, research and development service to manufacturing companies. Its personnel includes engineers who have specialized in air conditioning, heating and ventilation, construction and application of electronic devices, oscillographs, television, electric circuits, radiography, mechanical design and application, and plant survey and layout.

# "The Iron Industry—Yesterday—Today and Tomorrow"

By CHARLES S. BELSTERLING
Vice-President, United States Steel Corpn.

IN the early days of colonial Pennsylvania the iron industry was organized principally on plantations, each embracing several thousand acres. Within the plantation were the manor house (the home of the iron master), the cottages of the workers, the iron mines, the charcoal house and the dense forests from which the charcoal was obtained, the furnace, the forge and the store, the grist mill and the saw mill, and everything else usually comprised in the small feudal manors of medieval Europe.

By force of circumstances and because of meager knowledge of technology, the cottages of the workers were small, poorly furnished structures of stone or logs. The bedrooms were plain and bare, and rarely contained mirrors, tables, wardrobes, chests of drawers, or even chairs.

Within these plantations could be heard the sound of creaking wagons drawn by teams of horses, laboriously hauling the iron ore up the road to the furnace where the pig iron was made. Nearby was the forge, within which could be seen half-naked men of strong physique, who swung, with brute force, the white hot, pasty metal from the hearth to the great hammers by means of wide-jawed tongs.

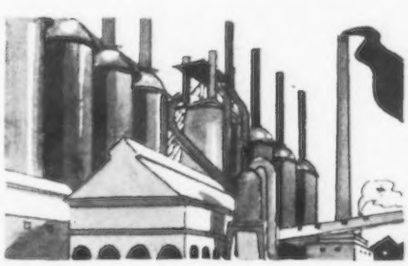
The workers were practically isolated from the outer world. Many of them did not even glimpse the stage coaches which ran from Philadelphia to the important centers of population throughout the colonies. Their children had no opportunity of receiving even the smallest amount of school training. Churches were few and far between. The lot of these workers was one of constant and heavy toil, and material comforts were few. Life was a cheerless thing for those men, who worked hard and long.

Extracts from an address before the Traffic Club of Philadelphia, April 9.

### Early Transportation Methods

The means of transporting the products of the plantation were likewise crude and primitive. The pig iron, bar iron and castings were hauled from the furnaces and forges in heavy open wagons, over tortuous roads, to the main highways, and thence slowly dragged to the nearby markets. The wages paid to the teamster and his helpers were mere pittances compared with the wages paid today, yet the cost of transportation was exceedingly high. For a distance of 40 miles, from Colebrookdale Furnace to Philadelphia, the freightage per ton varied from one pound to two pounds sterling. Today the same rate will transport a ton of pig iron to markets many hundreds of miles away, obviously because of the success of man's greatest practical achievement, the machine.

Such were the days before the so-called machine age, which the blind and the simple-minded are striving to have brought back to us!



As we turn our eyes from these old charcoal iron plantations of colonial days, and thence to the industry of the present, we see a vivid portrayal of the evolution of the industry from the primitive to the modern and the efficient.

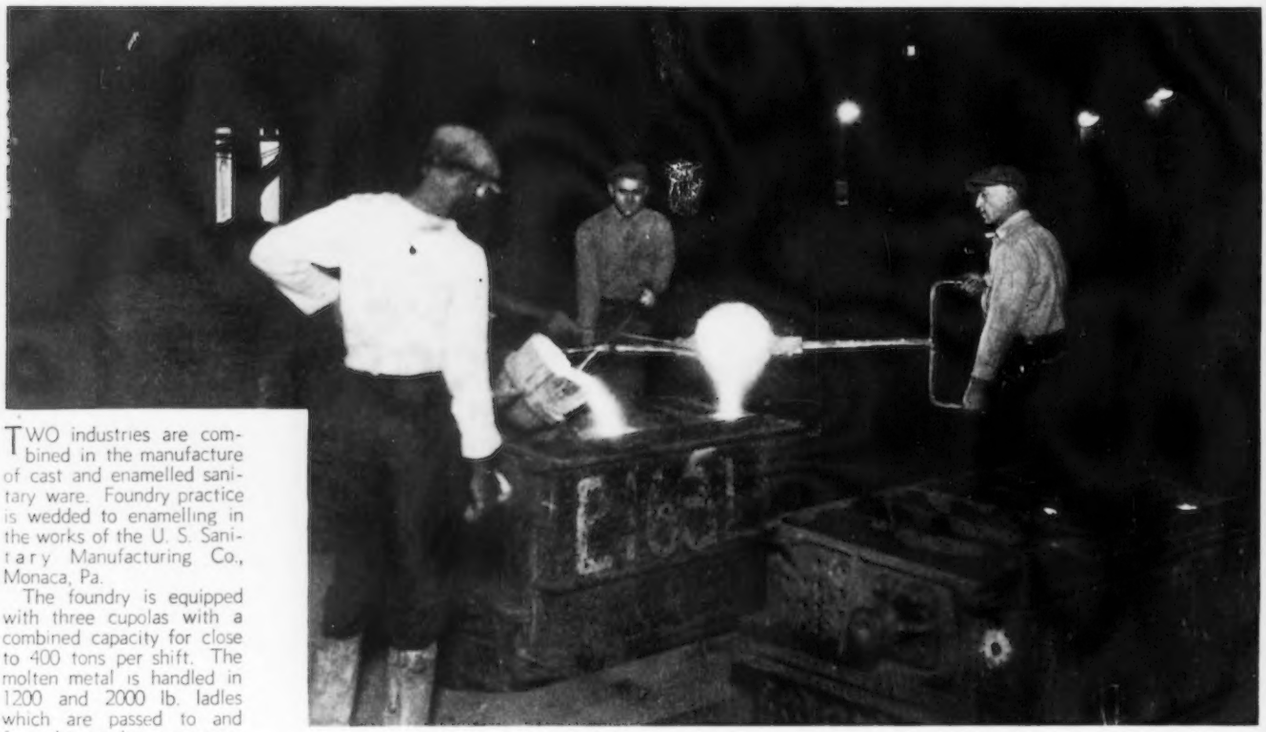
The history of the industry records the growth of the large business units, the prerequisites for the present day activities, the discovery of new sources of raw materials, and the invention of manufacturing and chemical processes, all lifting the heavy burden of toil from the backs of the laborers. And we see further the gradual expansion of the markets through the medium of the great transportation agencies of interstate and foreign commerce. All these elements of manufacture and transportation, if given the liberty to act freely, the liberty which our forefathers sought for their endeavors, will surely raise the industry to unprecedented heights — sounder than ever before.

But in this endeavor we sorely need the courage and fortitude of our forebears and their thirst for individual liberty.

### The Industry Today

Today the steel industry, the successor to the old charcoal iron industry, possesses the greater business units now so necessary to carry on, the machinery for mass production, adequate sources of raw materials, and the great transportation systems by means of which the products may

*(Concluded on Page 76)*

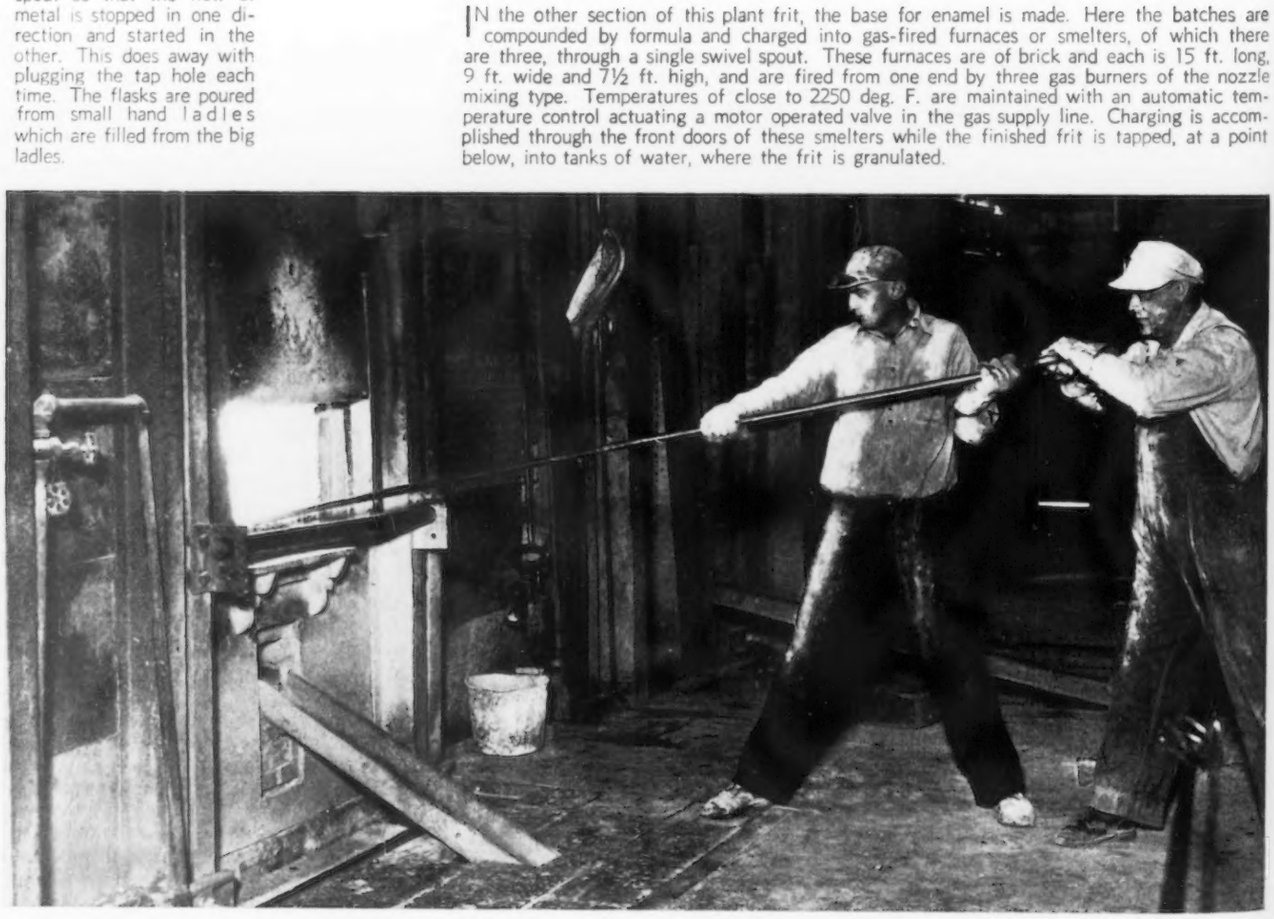


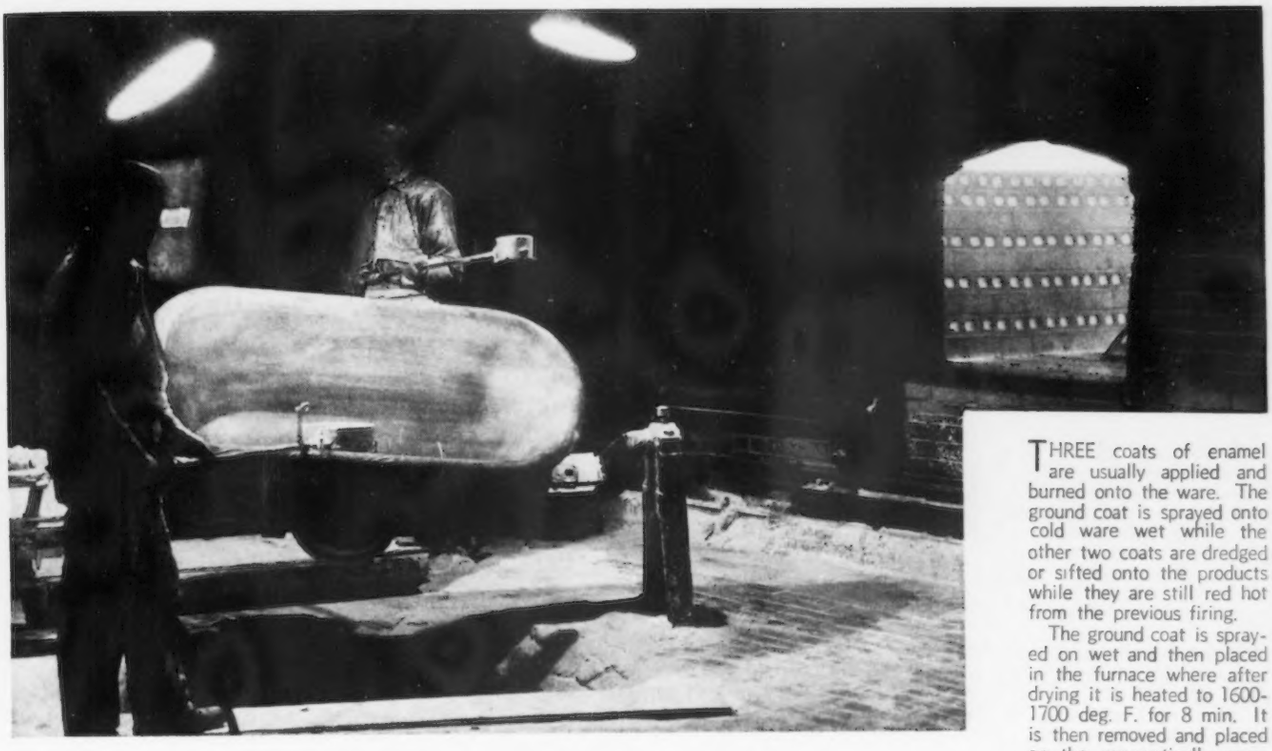
TWO industries are combined in the manufacture of cast and enamelled sanitary ware. Foundry practice is wedded to enamelling in the works of the U. S. Sanitary Manufacturing Co., Monaca, Pa.

The foundry is equipped with three cupolas with a combined capacity for close to 400 tons per shift. The molten metal is handled in 1200 and 2000 lb. ladles which are passed to and from the cupolas on an overhead monorail loop conveyor. Each cupola is tapped into a tilting, double spout so that while one ladle is being filled another can be set, and all the operator has to do is to tilt the spout so that the flow of metal is stopped in one direction and started in the other. This does away with plugging the tap hole each time. The flasks are poured from small hand ladles which are filled from the big ladles.

# Molding and Enamelling

IN the other section of this plant frit, the base for enamel is made. Here the batches are compounded by formula and charged into gas-fired furnaces or smelters, of which there are three, through a single swivel spout. These furnaces are of brick and each is 15 ft. long, 9 ft. wide and 7½ ft. high, and are fired from one end by three gas burners of the nozzle mixing type. Temperatures of close to 2250 deg. F. are maintained with an automatic temperature control actuating a motor operated valve in the gas supply line. Charging is accomplished through the front doors of these smelters while the finished frit is tapped, at a point below, into tanks of water, where the frit is granulated.





# Sanitary Ware

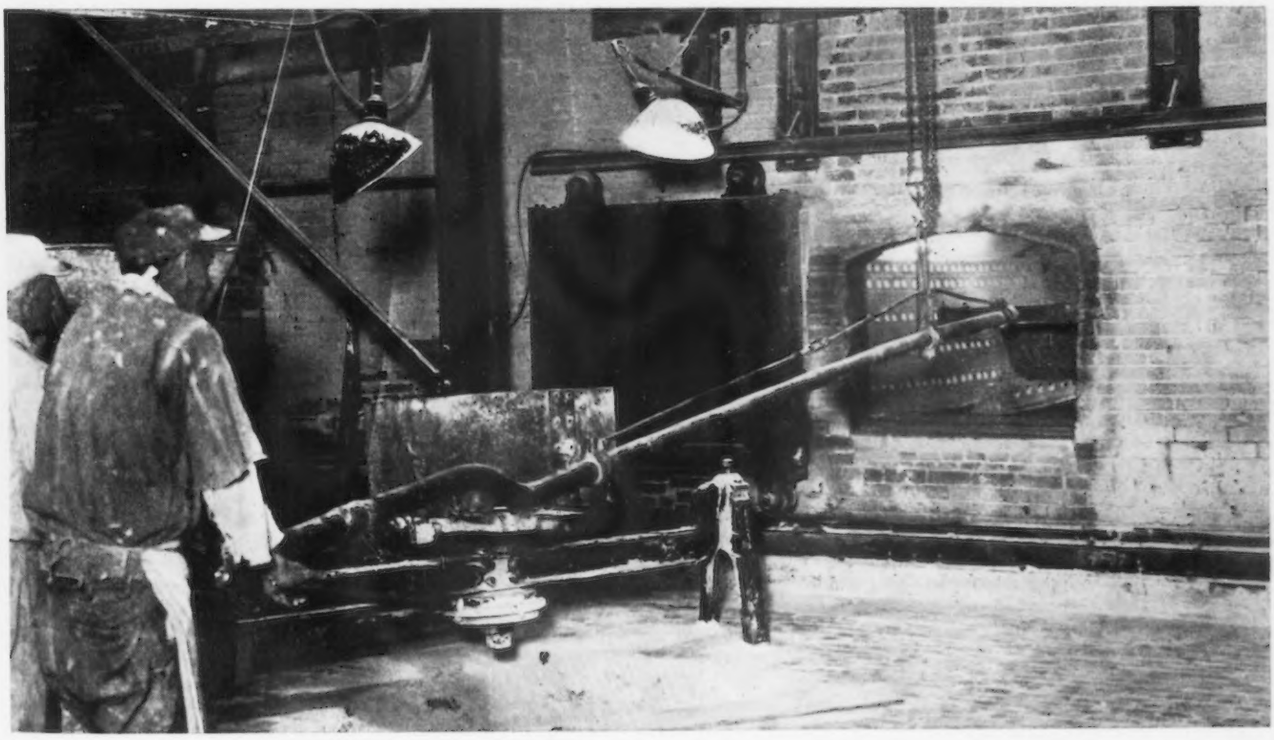
By J. B. NEALEY
American Gas Association

THERE are 12 brick furnaces in one room with their fronts set in the brick side wall of the enamel room. Immediately in front of each door is a swing post crane, a pneumatically operated enamel table, a hand fork and a long handled dredger. At the end of this hand fork grasped by the operator, air buttons protrude from the floor by which the furnace door can be opened and closed by foot leaving both hands free.

Seven of these furnaces are 9 ft. long, 8 ft. wide and 6 ft. high, while the others are 11 ft. long, 12 ft. wide and 6 ft. high, inside. These furnaces are of the semi-muffle type as the burners fire into individual flues below solid hearths.

THREE coats of enamel are usually applied and burned onto the ware. The ground coat is sprayed onto cold ware wet while the other two coats are dredged or sifted onto the products while they are still red hot from the previous firing.

The ground coat is sprayed on wet and then placed in the furnace where after drying it is heated to 1600-1700 deg. F. for 8 min. It is then removed and placed on the pneumatically operated enamelling machine which turns it in every direction while the operator sifts powdered enamel onto it with a long handled dredger. The ware is then returned to the furnace at the same temperature for 2 or 3 min. when it is removed for the third coat which is burned on in turn. This gives it a beautiful glossy coat of great endurance.



# New Things in Materials and Processes

By EDWIN F. CONE

## Facts About "Chapmanizing"

FACTS, for some time unavailable, regarding a case-hardening process, announced two or three years ago under the name of "Chapmanizing," are now freely commented on. They are interesting.

The process is a patented one originating with the Chapman Valve Mfg. Co., Indian Orchard, Mass., manufacturer of gray iron, steel and non-ferrous valves and fittings. Already about 20 licensees of the company are reported to be using the process. Succinctly stated, Chapmanizing is a "wet nitriding operation" and no special alloy steels or nitralloys are claimed essential. That is, certain low-alloy or low-carbon S.A.E. steels can be hardened efficiently and quickly.

Briefly, the steel to be hardened is heated in a salt or other suitable liquid bath to a moderate temperature, the bath being permeated with gaseous nitrogen. This is said to be obtained from electrically decomposed ammonia, the hydrogen of which is eliminated by burning. The result is a case-hardened steel, produced at a low temperature, with no warping. As an example of its speed, it is asserted that a case of 0.0020 in. has been produced in 2 hr.

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## Nickel Wrought Iron Is Heat-Treatable

SO many combinations of iron with other elements, as cast iron, plain steel, or alloy steels, are subject to heat treatment, that the fact that wrought iron is practically unresponsive comes as a surprise to many. The usual heat-treating methods do not greatly affect the physical properties of ordinary wrought iron.

The commercial development of nickel wrought iron was alluded to in these columns recently. Additions of about 3 to 3.50 per cent of the element to wrought iron bestows many interesting properties. One of the striking features is the conferring of heat-treating properties. Proper treatment at certain definite temperatures considerably augments the tensile strength and elastic limit of the untreated nickel wrought iron.

For example, after normalizing at 1600 deg. F., the tensile strength of the nickel wrought iron rises to about 62,500 lb. per sq. in. with the yield point elevated to about 42,000 lb. per sq. in. The elongation in 2 in. is about 31 per cent and the reduction of area is about 48 per cent. The properties of ordinary wrought iron approximate 48,900 lb. per sq. in. tensile strength, with 28,500 lb. per sq. in. yield point and an elongation of about 25 per cent in 2 in.

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## "Cavitation"—A New Problem

WITH the growth in size of turbines with their larger rotors and the increase diameters of propellers for modern large ships, a new problem has appeared. It is the wearing away of the metal from the back side or rear portion of the rapidly revolving parts. This is manifested in the appearance of numerous sizable cavities.

Of course, metals make up the composition of these wheels—stainless steels and so on in turbines, and manganese bronze, steel and the like in propellers. This wearing-away phenomenon is due to "cavitation," and it has grown to the dimensions of a serious problem.

The action of the water on the back of these wheels is so strong and intense that it is necessary to find some way to combat the abrasion of the metal. This was not noticed when turbines or propellers were smaller—their life was not menaced. But in the larger modern units, cavitation has reduced the life to such an extent that replacement in order, a matter of expensive concern. No solution to the problem has yet been vouchsafed.

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## "Kunial Alloys"—A New Non-Ferrous Series

SOME new copper alloys have recently been publicized in England. Under the name "Kunial," a series has been announced, the feature of which is that, "by simple heat treatment their strength, hardness and other mechanical properties can be very considerably improved," and the series includes brass, nickel-silver and bronze.

All the commonly known copper alloys are annealed and softened by raising them to temperatures of 400 to 600 deg. C. The claim is made that similar heat treatment of the Kunial alloys results in trebling the hardness and doubling the tensile strength. The alloys may be extruded, rolled, drawn and cold-worked.

The brass is described as an alloy of copper and zinc and "other added elements." By heating the soft, quenched alloy to 500 deg. C., the diamond pyramid hardness is increased by about 100, the limit of proportionality and proof stress are multiplied fourfold, the tensile strength is increased by 31,000 lb. per sq. in. while the elongation is reduced only 50 per cent. The changes are stated to be similar to those met with in such alloys as duralumin and beryllium-copper.

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## "Silica-Aerogel"—A New Insulator

A NEW heat-insulating medium has just been announced under the name, "Silica Aerogel." It is the invention of Dr. S. S. Kistler, professor of chemical engineering at the University of Illinois, Urbana, Ill.

The material is described as "an impalpably fine webwork of purest sand, interlocked with air and extremely light in weight. The most powerful microscope is unable to reveal its texture and its insulating power was estimated at fully 10 per cent more than that of still air and from 50 to 100 per cent greater than that of present commercial heat insulators." It is stated that this new insulator will stand a temperature of 1500 deg. F., and that it can be used as a heat insulator for refrigerators, electric ovens and furnaces "with more efficiency than any material now available."

Gelatinous silicic acid is prepared by acidifying water glass. Then everything is eliminated except silicic acid, which is a loose combination of silica and water, known as hydrogel.

Replacing the water with air, the hydrogel is converted into aerogel.

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## Modern Cast Iron

AT a recent meeting of the New York chapter of the American Society for Metals, an address was delivered by Dr. J. T. MacKenzie on "Modern Cast Iron." The speaker, who is chief chemist and metallurgist of the American Cast Iron Pipe Co., Birmingham, is widely recognized as an authority on the subject. His comments were in part as follows:

Graphite formation is one of the most important and yet troublesome constituents of cast iron. Graphite formation is the cause of the sudden expansion of cast iron during solidification. As more graphite forms, hardness increases and permanent set decreases.

The presence of sorbitic pearlite increases the amount of bend possible. The modulus of rupture is influenced by the shape of the piece, such as a channel, rectangle, square or round bar.

In fatigue, cast iron is not affected by notches and grooves; a notch that gave a decrease of 70 per cent fatigue in strength of steel gave only a 10 per cent decrease in fatigue strength of cast iron.

In alloy cast irons, molybdenum is one of the most strengthening alloys. Nickel augments the hardness; chromium, the tensile strength. In the heat-resisting field, "Niresist," a Ni-Cr-Cu alloy iron, was favorably commented on. As a composition for a nitriding cast iron the following was given: Total carbon, 2.50 per cent; silicon, 2.50; manganese, 0.60; chromium 1.70; aluminum, 1.40; with low phosphorus. This is heat treated first by hardening and tempering and then heated in ammonia at 900 to 1000 deg. F. The hardness of the resulting product is about 980, Victor Brinell.

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## Are Alloy Ingot Molds Probable?

IMPROVEMENT of the conventional cast iron ingot mold is contemplated, spurred on possibly by the experiments with the copper ingot mold. For years the regular ingot mold has been made of special Bessemer iron. Improvements have largely been confined during recent years to changes in design and to adoption of the large end up and the hot top. Marked advances have been achieved, resulting in better and more uniform steel in the ingot.

The contemplated betterment is the introduction of certain alloying metals into the iron for the molds themselves. Some research has already been initiated but definite results are not yet available. Judged by the progress made in alloy iron castings and their heat treatment, thus placing gray iron castings in the first rank, it is not improbable that some interesting metallurgical and valuable commercial results may ere long be forthcoming in the experience with alloy iron ingot molds.

• • •

## Steel Rails and Heat Treatment

IT is a common saying that steel rails are not heat treated and, in the general acceptation of the term, they are not. But actually they undergo, in the process of manufacture, a phase of heat treatment. For example, as the rails pass from the rolling mills to the hot beds and so on, they are subjected to air cooling which is responsible for the resulting microstructure and which is a recognized step in heat-treating practice.

In this connection some interesting speculation, which has reached the stage of verification in fact, is that steel rails go through an aging process which markedly affect their physical properties. If the manufactured rail is allowed to rest quietly for a period of time in certain conditions of room temperature and so on—perhaps 24 hr.—the resulting steel, as corroborated by careful tests, has a higher tensile strength and increased ductility, but a lowered elastic limit. The reason for this improvement, credited to the aging, is believed to be a relieving of stresses of rolling. These facts apply to straight carbon open-hearth rails.

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## Gold Replaced by Beryllium-Copper

IN these comments quite recently, the statement was made that small wheels of a beryllium-copper alloy are being used for electrical contact in a very delicate instrument and that they have only lately replaced other material.

It can now be stated that the material which has been replaced by the beryllium-copper was a small wheel of nickel-silver, the rim of which was covered with a reasonable thickness of gold.

The beryllium-copper is giving satisfaction because it is hard, has a long life, and sufficient electrical conductivity.

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## For Powder Metallurgy 18 Elements Are Available

REFERENCE to powder metallurgy was made in these comments (THE IRON AGE, Feb. 8), in connection with sponge iron, i.e., that substantial quantities of sponge iron in powder form are being imported and used in this country in a most interesting application.

Undoubtedly there is the possibility of unusual developments in powder metallurgy. Some of them have been discussed by a prominent New York importer of metals and alloys and by others. In this connection it is of interest to call attention to the fact that there are at least 18 elements which are commercially available in powder form. They are: Aluminum, arsenic, antimony, boron, cadmium, cobalt, copper, chromium, iron, lead, magnesium, molybdenum, nickel, silicon, silver (precipitated), tin (sponge powder), tungsten and zinc.

Judged by some of the products already made by powder metallurgy—copper and brass wire, metal bearings, tungsten wire and products—is it not likely that, with the above array of metals as powders in mind, other results of definite commercial interest may follow?

• • •

## A Copper-Molybdenum Rustless Steel

PREVENTION of precipitation of carbides in certain rustless steels—a burning problem of the day—is said to have been attained by one American company by adding copper and molybdenum to an 18 and 8 steel. This is true for certain special conditions. The composition suggested is approximately 8 per cent nickel, 18 per cent chromium, 1.25 per cent copper and 1.25 per cent molybdenum with low carbon.

It is claimed that steel of this type can be used for long periods at temperatures of 1000 to 1200 deg. F. with no resulting brittleness and without any detriment to the physical properties associated with rustless steels.

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## Cast Iron Plate Warping Solved

A MANUFACTURER of hardware in Australia has been having difficulty in finding the correct metal for the hot plates in the electric cookers it is producing. A cast-iron disk 7 in. in diameter and about ⅛ in. thick with a ½-in. flange around the circumference is used to cover the receptacle which holds the resistance wire in special grooves.

Experimenting with alloy irons of various compositions, the company was unable to find one that would retain its shape over the wide temperature range and also be machinable. Certain compositions, after casting and reheating above the critical range and cooled slowly, were not only unmachinable, but warped considerably.

A solution of the difficulties was suggested to be a "Niresist" iron containing about 16 per cent nickel, 6 per cent copper and 2.75 per cent chromium. This composition is machinable after the treatment above indicated and will not warp. The total carbon should be about 2.80 to 3.10 per cent with the silicon 1.20 to 2.00 per cent.

An American firm is using this composition for tops of oil burners.

# Wage Fixing Without Price Fixing Threatens Small Business Unit

By NELSON B. GASKILL
Formerly Chairman, Federal Trade Commission

**THE threat to the small business unit, said ex-chairman Gaskill in a recent address to the code authorities, is not in price fixing or in the suspension of the anti-trust laws. It is in wage fixing without minimum price fixing.**

**If wages are fixed for the small business man with the limited pocketbook, he is put on the same wage plane as his large competitor. So far, well and good. But unless minimum prices are also fixed, the result is an invitation for the concern with large resources to put the little fellows out of business.**

**This common sense viewpoint of the ex-commissioner is refreshingly different from that of some of his successors on the Federal Trade Commission, who approve wage fixing but not price fixing, and yet stand forth as champions of small enterprise.**

I DO not propose to argue that the small business unit is at a serious disadvantage under the present code policy. To me, at least, the fact is demonstrated. My argument is that the plight of the small unit will become increasingly desperate unless we make a radical change in our attitude toward price control.

It is erroneously assumed that the threat to the small unit is due to the suspension of the anti-trust laws and to acutely ingenious provisions written into the codes by the larger unit majority. Upon this erroneous assumption much well meant but mistaken criticism of the code system as we have operated it until now has been based. The truth of the matter seems to me to be this. The germ of monopoly exists in any code which arbitrarily fixes wage costs and prohibits their reduction unless it includes an equally arbitrary restraint upon the reduction of commodity prices. The tendency toward actual monopolistic conditions may vary as conditions vary in different industries but the possibility is inherent. Without protection against lowered price levels, the fixed wage cost becomes a nether millstone upon which the small unit can be ground to powder whenever the larger and richer majority force commodity price levels down sufficiently to impose loss upon their competitors. The result will be precisely the same if the lowered price level is merely the expression of a search for increased sales volume.

This power to state competitive prices in loss-creating terms has existed during the whole Sherman law period. Carrying as it does the deceptive appearance of an immediate benefit to the consumer, we have been blind to its long-term destructive consequences. We have cherished instead of destroying the most insidious monopoly of all, the power to control through the greatest capacity to impose and withstand loss.

Prior to the codes with their fixation of wage costs, it was always possible for any unit to meet this pressure to some extent at least, by a reduction of wage rates. But when we fix wage costs in the codes and prevent their reduction by fines and imprisonment, we equip the monopolistic power of loss-creating prices with a relentless force as terrible as it is new. The only possible remedy is to include in the code policy, as of equal necessity with the control of the price of labor, a control on the downward movement of commodity prices. This may mean a control of production or a minimum price level according as the conditions indicate. The same treatment may not be applicable in all cases.

I realize full well that this proposal lacks the emotional value and the easy justification which accompanies the fixation of wages. We have so long deluded ourselves with the belief of consumer benefit in loss prices that we are unwilling to face this situation fairly. But face it we must, deal with it honestly we must, meet its requirements we must or else we shall see under the codes, the progressive extinction of the small business unit first, and afterwards the collapse of the fixed wage scale. In this necessarily brief presentation, I can only outline the argument which supports so strong a statement.

We have laid violent hands upon an economic law proven through the experience of many generations. This law has been that the prices of commodities and the prices of labor, under conditions of free competition, will move up and down freely, in response to conditions of supply and demand. And that under these conditions the price of service or commodities constantly tends to equalize cost. Which means, at least, the security of the public and private financial structures to the extent that conditions of free competition are permitted to operate. However we may change this formula, it must still be capable of producing in operation the same financial security. But this we have not done.

### Old Economic Wage Law Repealed

We have declared in effect that the value of labor is not its productive value; that the price of labor is not to be affected any longer by the free competition doctrine, but the value and the price of labor is to set on a desirable social standard of living. Under no circumstances shall this wage rate move downward at the will of the employer. So much of the old economic law is repealed.

*(Concluded on Page 78)*

# Welded Steel Engine Bed On Streamlined Train

Welded steel crankcase of engine powering new streamlined Burlington passenger train.

ON the Chicago, Burlington & Quincy Railroad's new high speed streamlined passenger train, the engine bed or chassis of the motive power unit is of welded construction, fabricated from Cromansil steel, a recently developed, high strength steel, made by the Lukens Steel Co., Coatesville, Pa. This application is believed to be the first instance of the use of a welded steel engine bed on a motive power unit employed in main line railroad service in America.

The welded steel underframe supports a load of approximately 60,000 lb., consisting of the 600-hp., Winton full Diesel engine and generator which power the train, and the forward half of the power car. This 30-ton dead load imposes severe impact stresses on its supporting bed under the operating conditions encountered in service. The stresses are of a fatigue nature, since they are repeated many times per mile.

### Various Types of Load

Because of the variety of types of load to which the structure is subjected in service, analysis of the loads is highly indeterminate. Rail joints, switches and crossovers cause vertical impact. Acceleration and deceleration result in horizontal stresses of variable extent. Movement around curves at speed produces lateral stresses. Combinations of the various forms of stress can occur simultaneously. The requirements of service are further complicated by the necessity of minimizing weight. Naturally, the working stresses are high.

The design of the engine bed was developed by Lukenweld, Inc., division of the Lukens Company, in cooperation with the Edward G. Budd Mfg. Co., Philadelphia, builder of the train, and the railroad company. In developing the design, particular attention was given to the elimination of rectilinear elements which would involve undesirable concentrations of stress. Angles, channels and "picture-frame" correlations were avoided because they would result in severe changes in contour which, in turn, would be incipient points of failure.

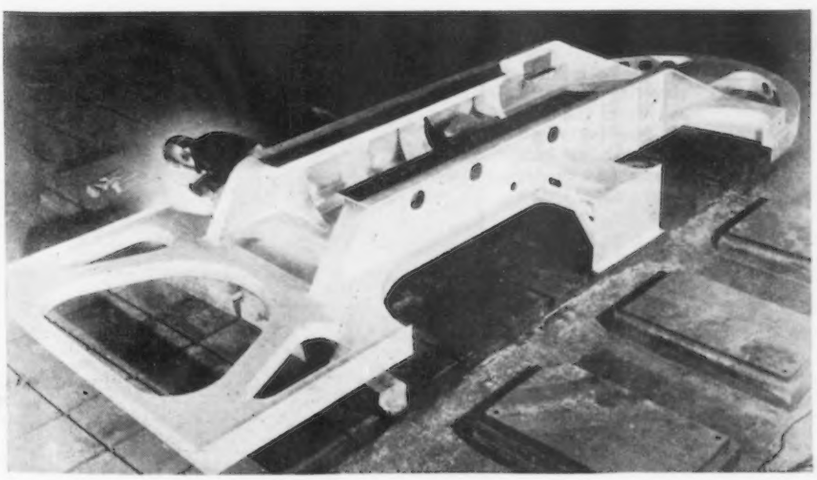
### Size of Engine Bed

The engine bed design utilizes extremely moderate changes in contour, not only to avoid concentrations of stress but also to introduce a high degree of redundancy. The mutual interaction of adjacent members is an important element in the functioning of the structure as a single unit rather than as a connected assembly of individual members.

The engine bed is 25 ft. 3½ in. long, 8 ft. 8 in. wide, and fabricated from 5/16-in. plates of Lukens Cromansil steel. It has a high ratio of load-carrying capacity to weight of metal employed, since it weighs only 6060 lb. and supports the 60,000 lb. load of engine, generator and forward half of the power car. It forms the bed of the front half of the first car of the train, and is joined at the rear to the stainless steel structure forming the balance of the car.

### Crankcase Also Welded

In addition to the engine bed, the crankcase of the full Diesel engine powering the train is also of welded construction, fabricated by Lukenweld, Inc., from Lukens Cromansil steel. The engine is two-cycle, 600-hp., with eight cylinders in line, direct connected to the generator. The complete engine, without generator and auxiliaries, weighs about 22 lb. per horsepower, which low ratio of weight to horsepower is largely the result of efficient design and fabrication in welded steel construction.



Engine bed, welded from 204 Cromansil steel plates, weighs only 3 tons and supports 30 tons of load. The plates were cut to shape by oxy-acetylene flame, then formed in powerful presses, and finally welded together by an electric arc producing a temperature of about 5500 deg. F.

## Safety Treads Now Made in Colors

ALUNDUM rubber bonded safety tread made by the Norton Co., Worcester, Mass., is now available in three colors—red, green and buff—in addition to the black originally offered.

The colored treads are made in the same sizes as the black. They have a surface that is highly non-slip even at the very nosing edge, the non-slip feature is permanent. As they have a flat level surface, there is nothing to catch heels or cause a tripping hazard. The treads are not affected by weather conditions and as their non-slip effectiveness is not lessened by water, they are suitable for outdoor as well as indoor application. High resistance to wear is another feature emphasized.

# Light-Type Universal Miller Designed To Give Greater Operating Efficiency

FEATURES that make for easy and rapid handling are emphasized by the Brown & Sharpe Mfg. Co., Providence, R. I., in offering the new light-type No. 2 universal milling machine here pictured. The machine is of simplified design, and although light and sensitive, it is proportioned to assure the rigidity essential to high accuracy.

The height of the spindle has been lowered to permit the operator to view more conveniently the cutters and the work, and to facilitate and make less fatiguing the handling and clamping of the work.

A 3 hp. flanged-type motor mounted at the rear drives the machine, the power being transmitted from a non-metallic motor pinion to an internal gear on the main driveshaft. The motor runs only when the machine is in operation, and is started and stopped by the regular starting lever on the side of the column. This lever also applies a brake for quick stopping. No clutch is used. All wiring, inclosed in a compartment directly beneath the motor, is accessible.

Sixteen spindle speeds, from 40 to 1300 r.p.m., are arranged in two series—a "high" and a "low," with eight changes each. Speeds are changed by rotating a lever on the side of the column in conjunction with the back gear lever. One-quarter revolution of the rotating lever gives a change in speed of the series engaged.

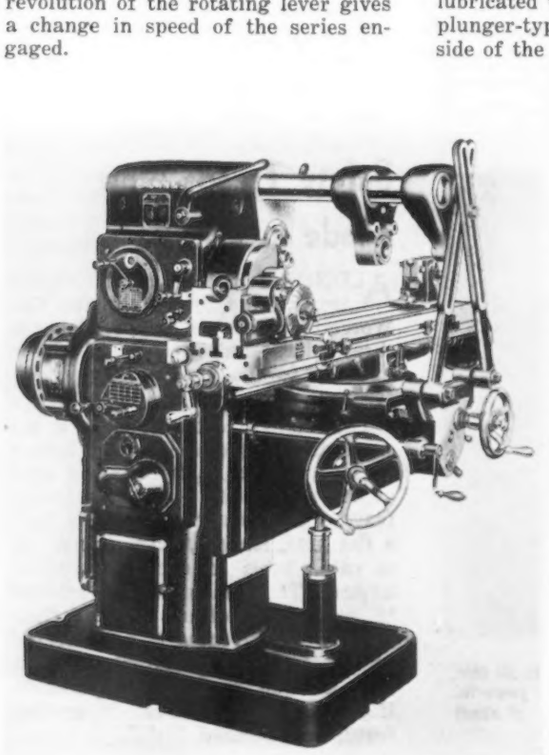
Single-lever feed control for all power movements is also provided. The 16 feed changes, ranging from ½ to 18¼ in. per min., are obtained by rotating the lever. All feeds can be disengaged by placing the feed lever in the "locked" position, thus preventing accidental engagement of feeds when power feeds are not desired. Directional longitudinal feed engagement is provided on the front of the table in addition to the transverse and vertical feed engagement levers on the side of the knee.

A departure has been made in the column design, the face on which the knee rests being set back about 4 in. from the end of the spindle. This gives added clearance for vises, fixtures and work, especially when using end mills, and also permits setting cutters nearer to the spindle nose with the table set at various angles.

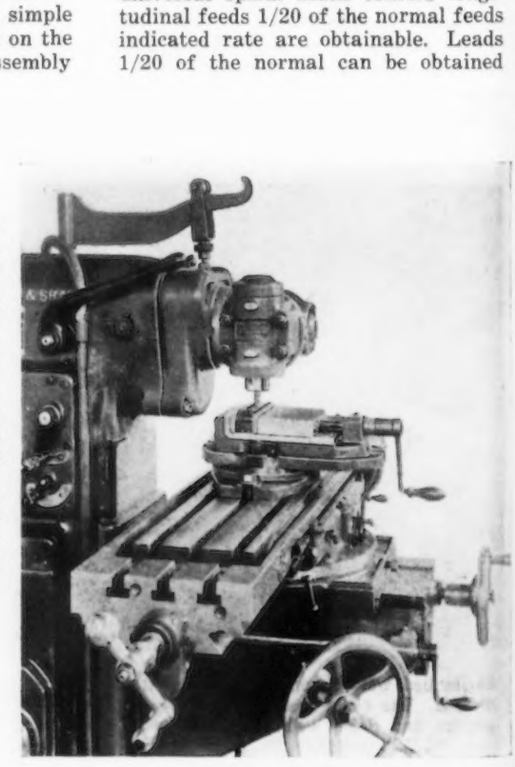
Heat-treated alloy steel gears are employed in both the feed and speed mechanisms; in addition, ground tooth gears are used throughout the speed train. Regardless of the speed engaged, the spindle drive is always through the spindle mounted directly behind the front bearings and driven through six integral splines. All driving shafts in the column are splined and are mounted on anti-friction bearings. All mechanism within the column is automatically pressure lubricated with filtered oil. A simple plunger-type pump is mounted on the side of the column in a unit assembly with oil filter and pressure gage. Oil is filtered each time it is circulated, and the filter may be cleaned by turning a handle located beneath the oil gage. Provision has been made for installing a coolant system if required.

A universal milling attachment with crane, arranged as shown, can be furnished as an extra. The crane permits swinging the attachment into position with minimum of time and effort from its place on the side of the machine where it remains when not in use. The attachment is rigidly supported both by clamping to the overarm and bolting to the column face. The spindle has the company's new cam lock construction for holding cutters, etc., that facilitates insertion and removal with assurance of positive drive. It is driven by heat-treated alloy steel spur and bevel gears mounted on splined shafts. The spindle and driving shafts are supported on anti-friction bearings. Wide range of adjustment together with a speed range of 82 to 2672 r.p.m. permits handling a wide variety of work requiring shell end mills from approximately 2¾ in. in diameter to the very small end mills used in mold and die work. There is a finished pad on the side of the machine where the attachment can be bolted when not in use. A slotting attachment can also be handled by the crane in place of the universal milling attachment.

A "short lead and feed reducing attachment," driven from the table screw, permits extremely fine feeds and may be used also with the universal index centers for obtaining short leads. When used without the universal spiral index centers longitudinal feeds 1/20 of the normal feeds indicated rate are obtainable. Leads 1/20 of the normal can be obtained



The reduced height of spindle facilitates observing the cutters and work. The close-up view at right shows the "set back" column face which gives added clearance for the work, and also the crane designed for handling the universal milling attachment. The latter, when not in use, may be swung to the side of the machine and bolted to the finished pad provided



when the attachment is geared to the worm of the headstock and leads 1/800 of normal when it is geared direct to the headstock spindle.

A vertical milling attachment that clamps to the overarm and is adjustable horizontally can also be furnished, as well as 10 and 18-in. hand feed rotary attachments and an 18-in. power feed rotary attachment driven from the table feed shaft.

The machine has longitudinal feed of 28 in., transverse feed of 10 in., and vertical feed of 15 in., all automatic. The universal spiral index centers swing 10 in. diameter and take 28 in. in length. The net weight of the machine, including driving motor, is approximately 2700 lb.

## Over-Running Clutch For Industrial Use

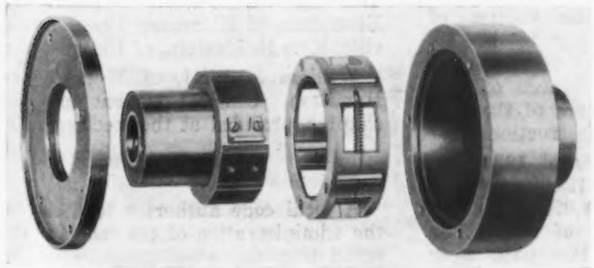
AN over-running or free-wheeling clutch for industrial use is being marketed by the Hilliard Corpn., Elmira, N. Y. It is designed on the principle that a roller running between an outer ring and an inner flat surface will drive between the outer and inner members when rotation is in one direction, and release or run free when rotation is reversed or when one member runs ahead of the other.

Simplicity of construction is a feature. Parts are made from wear-resisting materials, and bearing surfaces can be renewed without buying repair parts. The rollers are held in a bronze cage which is retained in its proper position when assembled by the small bracket shown on one face of the hub. The rollers bear only on every other flat surface and the bearing point is at one side of the center of the flat. The rollers also engage the ring pressed into the outer sleeve.

The inner member, the rollers, and the outer ring are made of oil-hardened high-carbon steel, ground to size. In continuous operation, any wear that occurs is said to take place on the flat surfaces; these may be renewed four times simply by moving the cage carrying the rollers to new positions on the center hub. A felt seal prevents leakage of lubricant.

The unit is sufficiently flexible so that it may be used either as a clutch or as a coupling to connect two shafts. The drive may be applied either through the outer sleeve or the inner hub on the shaft. A gear, sprocket, or pulley may be mounted on the sleeve. Direction of rotation may easily be reversed in the field.

The clutch is also furnished with a trip arrangement for use as automatic clutch where it is desired to start and stop a machine frequently without manual operation.



All parts of this Hilliard free-wheeling clutch are made from materials having high wear resistance.

## Tanks Combine Bolted And Welded Construction

ELIMINATION of warpage and out-of-roundness and savings in erection costs are claimed for the Catch-Bolt welded tanks recently announced by the Columbian Steel Tank Co., Kansas City, Mo. Fabrication consists merely of cutting, curving and punching the sheets for the tank on the regular bolted-tank machinery in the Columbian plant, excepting that the sheets are punched for bolts every 12 in. or more, instead of every 2 in. as for the regular bolted tanks. The sheets for the tank are then shipped to the erection site where they are set up and "catch-bolted" through the scattered bolt holes. The tank is trued to perfect round and plumbed. Then the welding crews go to work, welding every seam inside and out, the tank being held rigid for them by the bolts in it.

Sheets are cut, curved and punched in the usual manner, but the bolt holes are spaced 12 in. instead of 2 in. After the sheets are set up and "catch bolted" at the erection site, each seam is welded inside and out.

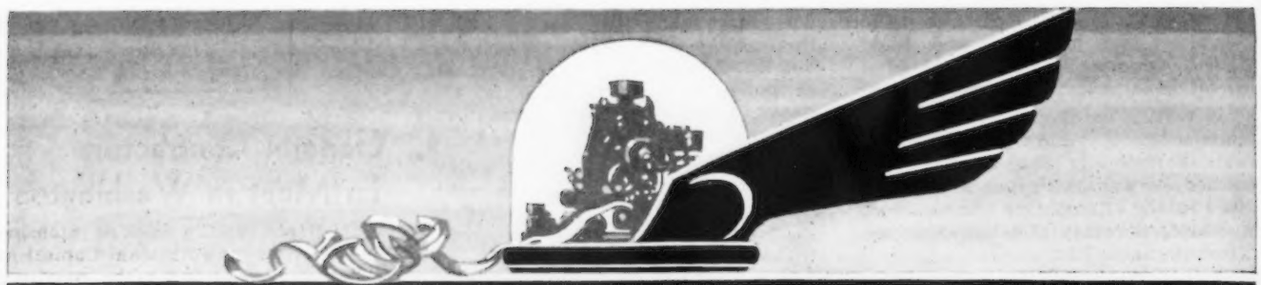
## General Contractors To Meet in Washington

CULMINATING a week of intensive activity at the National Capital in behalf of recovery for the construction and capital goods industries, which will include meetings of the United States Chamber of Commerce, the Construction League of the United States and the code authority for the construction industry, the governing and advisory boards of the Associated General Contractors of America will meet at the Willard Hotel, Washington, on May 4 and 5.

With the volume of construction activity under the present PWA program estimated to reach its peak of between 100 and 125 million dollars during the month of August of this year, and faced thereafter with a decline at the rate of $25,000,000 per month, officials of the Associated General Contractors and other leaders of the construction industry believe that substantial additional Federal funds for construction are immediately essential to the success of the recovery program, and the contractors will urge such appropriations at their May meeting.

## Charcoal Pig Iron Up 50c. a Ton

SUPERIOR CHARCOAL IRON CO., Grand Rapids, Mich., has advanced charcoal pig iron from $20.50 a gross ton for base grades to $21 for base grades, with the usual differentials for both special high and low silicon and other special irons. The change is effective April 16.



# THE NEWS OF THE WEEK

## Lull in Demand for British Iron, Steel Is Active

LONDON, ENGLAND, April 17 (*By Cable*).—The British pig iron market is quieter but the lull is believed to be temporary and old contracts are absorbing all of the present output. A total of 15 Scottish furnaces are now in operation, hematite output is heavy and a renewal of contracts is expected soon.

Heavy tonnages of steel are booked and employment is assured for some time ahead. Home railways as well as South Africa and Finland have placed substantial orders for rails. Structural steel is well specified, with brisk demand from Russia and the Far East.

The final draft of the proposed plan for reorganization of the British steel industry is being considered this week at a meeting of the National Federation of Iron and Steel Manufacturers.

March exports of pig iron totaled 9888 tons, of which 50 tons were shipped to the United States. Total exports of iron and steel for March amounted to 171,469 tons.

Tin plate orders are quiet but there is a fair volume of inquiry, especially from China and the Far East.

Continental iron and steel business is moderately active with good demand for beams and sheets, but bars and plates are quiet. The Continental Cartel is maintaining its programmed output for the second quarter at 320,000 tons. Polish works have booked substantial pipe orders for India and Japan and expect heavy Russian orders for rolled steel.

**British Prices, f.o.b. United Kingdom Ports**

*Per Gross Ton*

| | | | |
|---|---|---|---|
| Ferromanganese, export | £9 | | |
| Billets, open-hrth. | £5 10s. | to | £5 12s. 6d. |
| Tin plate, per base box | 16s. 6d. | to | 17s. |
| Steel bars, open-hearth | £7 17½s. | to | £8 7½s. |
| Beams, open-hrth. | £7 7½s. | to | £7 17½s. |
| Channels, open-hearth | £7 12½s. | to | £8 2½s. |
| Angles, open-hearth | £7 7½s. | to | £7 17½s. |
| Black sheets, No. 24 gage | £9 5s. | | |
| Galvanized sheets, No. 24 gage | £11 5s. | to | £11 15s. |

**Continental Prices, f.o.b. Continental Ports**

*Per Metric Ton, Gold £*

Current dollar equivalent is ascertained by multiplying gold pound price by 124.14 to obtain franc equivalent and then converting at present rate of dollar-franc exchange.

| | | | |
|---|---|---|---|
| *Ingots | £2 5s. | | |
| *Billets, Thomas | £2 7s. | | |
| Wire rods, No. 5 B.W.G. | £4 10s. | | |
| *Steel bars, merchant | £3 2s. | 6d. | |
| *Sheet bars | £2 8s. | | |
| Plates, ¼ in. and up | £4 1s. | 6d. | |
| *Plates, 3/16 in. and 5 mm. | £4 3s. | 6d. | |
| *Sheets, ⅛ in. | £4 8s. | 6d. | |
| *Ship plates | £4 10s. | | |
| *Beams, Thomas | £2 19s. | | |
| *Angles (Basic) | £3 1s. | 6d. | |
| Hoops and strip steel over 6-in. base | £4 | | |
| Wire, plain, No. 8 | £5 7s. | 6d. | |
| Wire nails | £5 15s. | | |
| Wire, barbed, 4-pt. No. 10 B.W.G. | £8 15s. | | |

*Prices as established by European Raw Steel Cartel.

## March Construction Shows Big Jump

MARCH contracts for construction of all descriptions amounted to $179,161,500; this was almost twice the total reported for February and about three times the volume of March, 1933, according to F. W. Dodge Corpn. Increases over both the previous month and March of last year were scored in each of the four principal classes of construction.

For the first quarter of 1934 contracts totaled $462,341,500 as contrasted with only $196,026,800 in the corresponding quarter of 1933. For residential building the gain over 1933 to date amounted to about 46 per cent; for non-residential building the increase was almost 85 per cent; for public works the 1934 volume was more than 3½ times the size of the 1933 total; while for public utilities the first quarter's total was about 2½ times as great as in the corresponding period of 1933.

## Armco Gets Large Stainless Sheet Order

THE United States Navy has just awarded a $175,000 contract to The American Rolling Mill Co. for 400,000 pounds of stainless steel sheets. This is believed to be one of the largest orders for stainless steel sheets ever placed.

The sheets will be manufactured in the company's Middletown, Ohio, and Butler, Pa., plants.

## Scrap Institute Chapters Elect

L. J. WORKUM, of the L. J. Workum Co., Portsmouth, Ohio, was elected chairman of the local code authority, under the scrap iron code, at a meeting of the Cincinnati chapter of the Institute of Scrap Iron and Steel, held at the Sinton Hotel, Cincinnati, on April 9. With forty dealers present, representing one of the largest meetings of the Cincinnati chapter, the following members of the local code authority were elected, in addition to Mr. Workum: H. D. Israel, of Israel Bros. Co., Dayton, Ohio, secretary; Malcolm Fleming, of Hickman, Williams & Co., Cincinnati; M. Klempner, of Klempner Bros., Louisville, Ky.; H. Epstein, of Indianapolis.

William J. Wolf, of Wolf & Co., Hamilton, Ohio, president of the chapter, presided at the meeting.

* * *

A local code authority to assist in the administration of the code for the scrap iron and steel industry in the

St. Louis District and Southwest region, was elected at a meeting of the St. Louis chapter of the Institute of Scrap Iron & Steel, held at the Statler Hotel, St. Louis, on April 10. The local code authority, comprising five men, consists of the following: Fred S. Fuld, Harry Benjamin Equipment Co., St. Louis; J. J. Rubenstein, of Alton, Ill.; D. H. Cohen, of D. H. Cohen, Inc., St. Louis; C. C. Cohen, of I. J. Cohen & Son, Kansas City; A. Grossman, of A. Grossman Iron & Metal Co., St. Louis.

Ninety scrap dealers were present at the dinner meeting, which was one of the largest since the foundation of the St. Louis Chapter in 1928.

## Asks Season's Play Without Rule Change

THE Government is taking too big a part in business affairs, according to Brigadier General Thomas S. Hammond, president The Whiting Corpn., Harvey, Ill., who recently addressed the Chicago Post of the American Legion.

He said, "If the NRA stood for what it started out to be—industrial self-government—it would be fine. There are lots of businesses that need the help the NRA could give. However, the further back in the picture that the Government remained the better it would be.

"How can business go ahead if the rules are constantly changed? We are entitled to play at least one full season without change. However, I don't think everything is going to smash."

## G. M. Exports Highest in Four Years

GENERAL MOTORS sales abroad of car and truck units, from all sources, for the first quarter of 1934 totaled 39,616 units, an increase of 79 per cent over the total for the corresponding period of 1933, and an increase of 83 per cent over the total for the first quarter of 1932.

The March results, reflecting a continuation of the vigorous upward trend which has been in evidence since the spring of 1933, were at the highest level of any month since May, 1930. The total of 18,106 units was 88 per cent greater than the total in March, 1933, and 123 per cent greater than the total in March, 1932.

These gains are world-wide in extent, and apply not only to the corporation's products manufactured in the United States and Canada, but also to the Opel product manufactured in Germany, and the Vauxhall product manufactured in England.

# Employment Rising in German Steel Industry—Machinery Makers Busier

HAMBURG, April 3 *(By Special Correspondence)*.—The German iron and steel market is very active. Employment at the end of January was 2700 ahead of the corresponding December total. At the end of February a further rise of 1970 was reported and the close of March reflected another 2200. More furnaces are now in blast than at any time since early 1930, and one of the most modern European blast furnaces has just been constructed by the Büderrusche Eisenwerke at Wetzlar.

In spite of the 140 per cent increase in iron ore production, stocks have declined to only 14 days' consumption, compared with 68 days' in March, 1933, and imports are constantly rising. Stocks of pig iron at the end of March were sufficient for 24 normal days' consumption, compared with 102 days' of one year ago. The domestic market, of course, gets first credit for this improvement, but the export trade as a whole is also better than last year.

Heavy hoops have not been in such strong demand since 1928. Russia is buying high quality products, such as bright drawn steel, stainless steel, sheet piling, etc., while the bulk of its joist and plate business is being booked by Belgium.

### Cartel Policy Unsatisfactory

The Continental cartel's policy of price discrimination to various countries is proving to be a fallacy. As reported previously, prices were set up differently for almost every market. The effect was that rush orders came from those markets which enjoyed the lowest prices, while business in other markets was stagnant. Orders from markets with the lowest prices exceed by two or three times the possible amount of business which could come from these markets, making it obvious that the trade was finding in these conditions a remunerative possibility of buying below the official quotations. Prices for China, Manchukuo, Japan and the Philippines, Siam and the Dutch Indies for bars, joists, etc., have now been made uniform and prices for European markets will follow. Only for Latin America an advance will remain in force due to the difficult conditions of payment which are ruling in these markets.

### Machine Tools Active

Both the domestic and export markets for precision machine tools are improved. New designs of tools for various industries are so well bought that many makers have orders in hand which carry them over the next year and some have stopped quoting. A few makers at the Leipzig Fair sold their production for six months.

The entire German machinery industry is operating at 46.5 per cent of capacity, according to a report of the Federation of German Machinery Manufacturers, compared with 38.4 per cent at the same time last year. The improvement is principally due to better business from domestic sources, whereas export orders are still scarce.

### German Automobile Output Higher

The motor car business is very satisfactory. Sales of German-produced motor cars were 102,000 in 1929, 97,300 in 1930, 55,400 in 1931, 40,800 in 1932, and 80,000 in 1933. It is estimated that the figure will exceed 120,000 this year, which would be better than the best post-war year. The motor car exposition at Berlin was a success. Sales were from 110 to 150 per cent better than last year and it is very probable that the estimate of 120,000 cars this year will be greatly exceeded.

## New Index Of Automobile Sales

THE annual dollar sales of new passenger automobiles declined 75 per cent from 1929 to 1932, and recovered by 22 per cent during the year 1933, according to the new monthly index of automobile sales appearing in the April issue of "Survey of Current Business," published by the Bureau of Foreign and Domestic Commerce.

The trend of sales was sharply downward from 1929 through 1932 and the first four months of 1933, but the greatest drop occurred between 1931 and 1932, when sales decreased 43.5 per cent. The decrease between 1929 and 1930 was 35.5 per cent and between 1930 and 1931 was 32.5 per cent.

The largest months' sales shown by the index, which is based on the 1929-31 average as 100, occurred during the peak season of 1929, when the index numbers were 168.8 for March, 232.7 for April, and 205.0 for May. Even after allowance is made for usual seasonal fluctuations the same three months of 1929 are still the largest, with adjusted index numbers of 153.5, 154.5, and 146.0 respectively. The lowest index numbers recorded are 17.3 for December, 1933; 22.3 for October, 1932; 17.6 for November, 1932; and 19.3 for December, 1932. But on a seasonally corrected basis October and November of 1932 become the lowest months, at approximately equal level, with adjusted index numbers of 28.0 and 28.5 respectively.

This new index was constructed by

the Bureau of Foreign and Domestic Commerce to show the trend of consumer expenditures for new passenger automobiles. This is the second of a series of new index numbers of retail sales being compiled by the Bureau. A description of the index of variety store sales was published in the March issue of the "Survey of Current Business," and indexes of grocery store sales and rural sales will be published later.

The index is constructed from unit sales figures expressed in number of cars (reported to the National Automobile Chamber of Commerce by individual companies) which represent over 95 per cent of all dealers' sales. For converting the unit sales figures to dollar values an index of monthly changes in the "average price realized" was developed, based upon the price of the most popular body type, and weighted by the monthly registrations for each make and model.

The complete record by months since January, 1929, follows:

INDEX OF DOLLAR SALES OF NEW PASSENGER AUTOMOBILES (1929-31=100)

Without Seasonal Adjustment

| | 1929 | 1930 | 1931 | 1932 | 1933 | 1934 |
|---|---|---|---|---|---|---|
| January .. | 90.8 | 74.1 | 47.3 | 31.2 | 28.1 | 22.8 |
| February .. | 111.4 | 94.6 | 59.7 | 36.8 | 27.8 | *47.1 |
| March .... | 168.8 | 122.5 | 79.9 | 38.4 | 32.5 | ... |
| April ..... | 232.7 | 154.5 | 112.0 | 55.5 | 45.5 | ... |
| May ..... | 205.0 | 141.4 | 94.3 | 52.1 | 59.9 | ... |
| June ..... | 183.2 | 118.2 | 80.8 | 56.5 | 65.2 | ... |
| July ..... | 168.0 | 91.5 | 70.9 | 31.0 | 57.5 | ... |
| August .... | 167.0 | 87.8 | 58.8 | 34.0 | 58.3 | ... |
| September.. | 133.8 | 78.7 | 47.2 | 30.5 | 51.2 | ... |
| October ... | 120.0 | 62.6 | 38.5 | 22.3 | 42.7 | ... |
| November .. | 82.8 | 44.0 | 30.8 | 17.6 | 33.0 | ... |
| December .. | 65.1 | 46.9 | 34.5 | 19.3 | 17.3 | ... |
| Annual Index ... | 144.1 | 93.0 | 62.9 | 35.5 | 43.3 | ... |

With Seasonal Adjustment

| | | | | | | |
|---|---|---|---|---|---|---|
| January .. | 138.5 | 110.5 | 70.5 | 45.5 | 41.0 | 33.5 |
| February .. | 136.5 | 114.5 | 72.5 | 44.0 | 33.0 | *56.0 |
| March .... | 153.5 | 113.5 | 74.0 | 36.0 | 30.5 | ... |
| April ..... | 154.5 | 103.5 | 75.0 | 37.5 | 30.5 | ... |
| May ..... | 146.0 | 100.5 | 67.0 | 37.0 | 42.5 | ... |
| June ..... | 141.5 | 90.0 | 61.5 | 42.5 | 49.0 | ... |
| July ..... | 152.0 | 83.0 | 64.5 | 28.0 | 52.5 | ... |
| August ... | 148.5 | 78.0 | 52.5 | 30.0 | 52.0 | ... |
| September.. | 141.5 | 82.0 | 49.0 | 31.0 | 52.0 | ... |
| October ... | 141.0 | 76.0 | 46.5 | 28.0 | 53.5 | ... |
| November .. | 132.5 | 70.5 | 49.5 | 28.5 | 53.0 | ... |
| December .. | 113.0 | 82.5 | 60.5 | 34.0 | 30.5 | ... |

*Denotes that figures are preliminary

## Base Price on Tinned Edging Strip Steel

THE board of directors of the American Iron and Steel Institute has acted favorably on an application of a member to quote a base price on tinned and/or lacquered edging strip steel.

# Shipping Code Provisions Opposed By Traffic League

COPIES of the proposed code for the shipping industry are causing considerable comment in shipping circles. At the offices of The National Industrial Traffic League, a nation-wide organization of shippers, it was pointed out that those sections of the code which deal with the filing of rates with the code authority, the administration of minimum rates and the adjudication of complaints with reference to rates will amount practically to a system of rigid rate regulation on all vessels flying the United States flag. Especial apprehension was felt over what appeared to be the fact—that such regulation would not take cognizance of so-called differential rates, a considerable structure of which has grown up applying as fixed reductions on slower traffic or between specified points.

The National Industrial Traffic League, through its Inland Waterways Committee, of which F. S. Keiser, Traffic Commissioner, Chamber of Commerce, Duluth, Minn., is chairman, has addressed a protest to the National Recovery Administration and pointed out five specific objections directed particularly to Section 7, namely:

1. We object in its entirety to the establishment of Article 7 of the proposed code for reason that it places the man who pays the freight bill at the complete mercy of the boat owners.

2. It cannot possibly result in anything but increased transportation charges and will undoubtedly result in the deflection of traffic not to the water lines but away from the water lines.

3. There is no public demand for further regulation of water lines than now exists.

4. No provision is made for an elasticity in the making of contract rates that are absolutely necessary if traffic is to move freely by this mode of transportation.

5. The recourse provision shown in Section 3 is more or less a joke. What good will it do to complain after you have lost the business?

"The foregoing are specific objections. The outstanding objection is the extension of bureaucracy over business which heretofore operated on the Great Lakes particularly in a highly satisfactory manner to all concerned. Control is placed in Washington over transportation matters located many miles distant therefrom and in the hands of men who do not know any more about conditions incident to water transportation from the standpoint of the public than the man in the moon. The establishment of this code, as written, places the transportation paying public in an unbearable position, without any voice whatsoever as to the amount of transportation charges which they must pay, wholly at the mercy of the boat owners, whose previous conduct clearly indicates what their subsequent conduct will be and this can only result in a highly unsatisfactory arrangement."

## Willys Overland Sale Of Excess Machinery

ANNOUNCEMENT of the proposed sale of excess machinery and equipment in the plants of Willys Overland will in no way lessen the needed productive facilities of the plants or production schedules of Willys Overland, it was announced by David R. Wilson, president.

The plants are now in production of the new Willys 77 to meet the requirements of distributers and dealers throughout the United States and in foreign countries.

Many thousands of the new Willys models have been disposed of throughout the domestic territory, while hundreds of others have been loaded on steamers to meet the immediate requirements of an urgent foreign demand.

The factory has contracted for large quantities of iron, steel, castings, tires and other materials to further its present production schedule.

## Newport Rolling Mill Strike Settled

SETTLEMENT of the strike at Newport Rolling Mill, Newport, Ky., was effected last Thursday following conferences among company officials, Amalgamated Association of Iron, Steel and Tin Workers' representatives and George T. Watson, Indianapolis, executive secretary of the Federal Regional Labor Board. The strike, affecting 900 men, occurred the previous week, when a member of the union was directed not to report for work after he and three others of the Union Advisory Board had left an employees' meeting called by A. K. Andrews, president of the mill, to announce wage increases.

While no authoritative statement was issued, it was announced that the four union members who left the meeting admitted they were at fault in leaving the meeting and agreed to assist in getting all men to return to work. It was also announced that the four union men agreed the "walk-out" was unfair.

# Employment Record is Bright Page In Corporation's History

"I DO not believe there is a brighter page in industrial history than your corporation wrote through this depression in its treatment of its servants," declared Myron C. Taylor, chairman, United States Steel Corpn., at the recent annual meeting of stockholders.

"And it is one that is worth more to you and worth more to your community in its effect upon the community than the money possibly could have been to the corporation or to you, its stockholders."

Referring to the corporation's annual reports and occasional news releases regarding its affairs, he stated, "You must be aware that since 1929 when the depression first started this corporation undertook to deal so fairly with all its workers that such work as was available would be distributed among them and as many of them as possible would be given some employment and some income.

"None of us realized in 1929 and 1930 that this depression would be as serious as it has been nor last so long as it has. But we continued that policy even when in the spring of 1933 our production fell to the low point of 9 per cent of our capacity.

"Where no work could be found we extended credit to our employees for food, fuel, clothing and medical assistance, and postponed the payment of their rents; and in cases where destitution appeared and the credit practice was not desirable we even made substantial direct contribution to their welfare. . .

"It eventually transpired throughout the country that while many of the large corporations followed the practice that we had been engaged upon, many others were not doing so. Expanding the work in the community so as to reemploy those who had no means of subsistence became a thing of great moment in the eyes of the Government, and so the National Industrial Recovery Act was based upon that necessity as I understand it, or at least their interpretation of that necessity. According to the figures that the President has quoted, a very great number of men have been put back to work through the nationwide reduction of hours, which carried with it a corresponding increase of pay, in order that the men who previously were securing on the average only a limited or inadequate income might not be further penalized. In this way greater numbers could be placed at service and the income of those already occupied was not affected.

"In the United States Steel Corpn. the increase in pay last July, measured by the basic rate, amounted to 25 per cent. In 1929, the Corporation had at work 220,000 men and women, 12,000 of whom were engaged in construction, rebuilding of plants and construction work of one sort or another. We have today 200,000 men. The average hours of work which we are today able to give these men is 29, whereas the maximum permissible under the steel code is 40. We wish we had a sufficient volume of business to give our men 40 hr. employment each week.

"Our production this week last year (first week in April) was 14.8 per cent; this year it is 40 per cent. The average for the year 1932 was 18 per cent; the average for the year 1933 was 29 per cent; and today it is 40 per cent."

## Digest of Electric Melting News

THE Detroit Electric Furnace Co., Detroit, has published its initial number of a Digest of Electric Melting News. Its function is to bring together in one cover concentrated information on electric melting which appears in various industrial publications, society proceedings, etc. The first number consists of eight pages of boiled down, well illustrated information.

## Wire Products Jobbers Sign Agreement

PURSUANT to the provisions of Regulations No. 3 of the Steel Code, the following named concerns are reported as having signed the jobber's agreement. The products covered by these respective agreements, as submitted to the secretary, are all those mentioned in Regulations No. 3 unless otherwise indicated. The key to identification, when not all such products are covered, is (1) wire nails, (2) wire staples, (3) barbed wire, (4) twisted barbless wire, (5) merchant quality wire, (6) wire fencing, (7) wire bale ties, and (8) steel fence posts.

| Name | Address | Products Covered by Agreement |
|---|---|---|
| Carlisle Hardware Co. | Springfield, Mass. | 1, 2, 3, 4, 5, 6 and 8 |
| Central Texas Grocery Co. | Corsicana, Tex. | All |
| Emmert Hardware Co., Inc. | Hagerstown, Md. | All |
| Goshorn Hardware Co. | Charleston, W. Va. | 8 |
| Jellico Grocery Company | Williamsburg, Ky. | All |
| The Kahl Holt Co. | Baltimore, Md. | All |
| Louisville Tin & Stove Co. | Louisville, Ky. | All |
| Marshfield Milling Co., Inc. | Marshfield, Wis. | 2 and 3 |
| Meredith Supply Co. | Annapolis, Md. | All |
| Jos. F. Meyer Co. | Houston, Tex. | All |
| H. S. Newcomer & Son | Mount Jay, Pa. | 7 |
| Peoples Groc. Co., Inc. | Orange, Va. | All |
| Richmond Hardware Company | Richmond, Va. | All |
| Samuel Shirk & Son, Inc. | Hanover, Pa. | All |
| Wm. Van Hodgenhuyze Hdw. Co., Inc. | San Antonio, Tex. | All |
| Victoria Hardware Company | Victoria, Tex. | All |
| The Warren Hardware Co. | Warren, Ohio | All |

## Fabricated Bookings Up in March

MARCH bookings of orders for fabricated structural steel, according to preliminary reports received from 66 per cent of the industry, by American Institute of Steel Construction, were the largest in volume of any month this year. They were 18 per cent larger than the average monthly bookings during the last quarter of last year and 5 per cent larger than the bookings of March, 1933. Shipments, however, were smaller than those for similar periods. Consequently the tonnage ahead for fabrication is today approximately 13 per cent larger than it was this time last year. It should be recalled that March, 1933, was a month of acute financial and commercial distress.

## Superior Ore High In Iron Content

THE average iron content of Lake Superior ore in 1933 was higher than in any previous year in a 10-year period except in 1932, when shipments were too light to make any fair comparison. The average iron content last year was 51.85 iron natural, as is shown by the annual analysis report of the Lake Superior Iron Ore Association. The average in 1932 was 52.16.

The average content of low phosphorus non-Bessemer ore last year was 51.45, the highest in several years. The average content of Bessemer ore, 54.30, was the lowest in ten years.

# February Iron and Steel Exports Decline—Imports Up Slightly

### Exports of Iron and Steel from the United States

(In Gross Tons)

| | February | | Two Months Ended Feb. | |
|---|---|---|---|---|
| | 1934 | 1933 | 1934 | 1933 |
| Pig iron | 326 | 192 | 652 | 563 |
| Ferromanganese | 6 | .... | 6 | .... |
| Scrap | 75,884 | 38,141 | 163,156 | 69,944 |
| *Pig iron, ferroalloys and scrap* | 76,216 | 38,333 | 163,814 | 70,507 |
| Ingots, blooms, billets, sheet bars | 679 | 4 | 1,134 | 95 |
| Skelp | 817 | 238 | 1,636 | 395 |
| Wire rods | 1,190 | 2,035 | 8,201 | 2,746 |
| *Semi-finished steel* | 2,686 | 2,277 | 10,971 | 3,236 |
| Steel bars | 3,348 | 1,390 | 6,664 | 2,475 |
| Alloy steel bars | 163 | 45 | 551 | 75 |
| Iron bars | 58 | 21 | 170 | 44 |
| Plates, iron and steel | 3,004 | 530 | 5,491 | 882 |
| Sheets, galvanized steel | 4,263 | 1,539 | 9,079 | 3,991 |
| Sheets, galvanized iron | 81 | 34 | 188 | 59 |
| Sheets, black steel | 4,912 | 1,961 | 10,660 | 4,518 |
| Sheets, black iron | 157 | 154 | 299 | 277 |
| Hoops, bands, strip steel | 1,884 | 1,432 | 4,785 | 2,376 |
| Tin plate, terne plate | 16,512 | 2,905 | 37,630 | 7,338 |
| Structural shapes, plain material | 1,505 | 556 | 2,648 | 1,137 |
| Structural material, fabricated | 1,464 | 811 | 3,548 | 1,180 |
| Tanks, steel | 1,648 | 24 | 2,128 | 503 |
| Steel rails | 11,111 | 759 | 23,378 | 3,079 |
| Rail fastenings, switches, frogs, etc. | 2,715 | 156 | 6,547 | 541 |
| Boiler tubes | 554 | 546 | 1,052 | 848 |
| Casing and oil line pipe | 3,730 | 3,480 | 9,516 | 4,641 |
| Pipe, black and galvanized, welded steel | 2,773 | 1,837 | 6,429 | 3,153 |
| Pipe, black and galvanized, welded iron | 223 | 41 | 367 | 118 |
| Plain wire | 3,374 | 500 | 6,892 | 890 |
| Barbed wire and woven wire fencing | 3,324 | 1,775 | 5,659 | 2,667 |
| Wire cloth and screening | 59 | 28 | 95 | 68 |
| Wire rope | 120 | 84 | 404 | 191 |
| Wire nails | 966 | 479 | 1,832 | 1,080 |
| Other nails and tacks | 375 | 392 | 683 | 607 |
| Horseshoes | 1 | 3 | 23 | 6 |
| Bolts, nuts, rivets and washers, except track | 398 | 241 | 822 | 426 |
| *Rolled and finished steel* | 68,722 | 21,723 | 147,540 | 43,180 |
| Cast iron pipe and fittings | 1,393 | 395 | 2,483 | 829 |
| Malleable iron screwed fittings | 238 | 104 | 573 | 216 |
| Car wheels and axles | 391 | 429 | 697 | 1,206 |
| Iron castings | 814 | 80 | 1,427 | 399 |
| Steel castings | 61 | 47 | 154 | 95 |
| Forgings | 261 | 224 | 519 | 427 |
| *Castings and forgings* | 3,158 | 1,279 | 5,853 | 3,172 |
| All other | 402 | 283 | 1,029 | 510 |
| Total | 151,184 | 63,895 | 329,207 | 120,605 |

### Imports of Iron and Steel Products into the United States

(In Gross Tons)

| | February | | Two Months Ended February | |
|---|---|---|---|---|
| | 1934 | 1933 | 1934 | 1933 |
| Pig iron | 10,777 | 8,382 | 22,663 | 14,826 |
| Sponge iron | 28 | 53 | 73 | 53 |
| Ferromanganese and spiegeleisen* | 2,729 | 875 | 4,142 | 4,131 |
| Ferrochrome† | 17 | .... | 18 | .... |
| Ferrosilicon‡ | 28 | .... | 63 | 4 |
| Other ferroalloys | .... | .... | .... | 1 |
| Scrap | 4,343 | 238 | 5,503 | 450 |
| *Pig iron, ferroalloys and scrap* | *17,922* | *9,548* | *32,462* | *19,465* |
| Steel ingots, blooms, etc | 67 | 53 | 121 | 56 |
| Wire rods | 864 | 918 | 1,611 | 2,114 |
| *Semi-finished steel* | *931* | *971* | *1,732* | *2,170* |
| Concrete reinforcement bars | 229 | 182 | 275 | 448 |
| Hollow steel bars | 48 | 74 | 109 | 161 |
| Merchant steel bars | 1,254 | 1,812 | 2,287 | 3,476 |
| Iron bars | 26 | 21 | 72 | 37 |
| Iron slabs | .... | .... | 1 | 1 |
| Boiler and other plate | 6 | 11 | 23 | 51 |
| Sheets, skelp, and saw plate | 348 | 1,042 | 836 | 2,279 |
| Tin plate | 2 | 20 | 5 | 39 |
| Structural shapes | 1,523 | 1,597 | 2,553 | 3,270 |
| Sheet piling | .... | .... | .... | .... |
| Rails and rail fastenings | 186 | 78 | 376 | 279 |
| Welded pipe | 221 | 353 | 476 | 633 |
| Other pipe | 279 | 61 | 806 | 138 |
| Barbed wire | 347 | 1,100 | 1,896 | 2,817 |
| Round iron and steel wire | 147 | 173 | 405 | 328 |
| Flat wire and strip steel | 184 | 60 | 233 | 125 |
| Wire rope and strand | 103 | 137 | 248 | 264 |
| Other wire | 64 | 63 | 66 | 288 |
| Hoops and bands | 1,040 | 1,751 | 1,863 | 3,196 |
| Nails, tacks, and staples | 414 | 558 | 1,019 | 1,565 |
| Bolts, nuts, and rivets | 25 | 21 | 53 | 41 |
| Other finished steel | 10 | 24 | 37 | 75 |
| *Rolled and finished steel* | *6,456* | *9,138* | *13,639* | *19,511* |
| Cast iron pipe and fittings | 1 | .... | 3 | 54 |
| Castings and forgings | 97 | 91 | 224 | 143 |
| Total | 25,407 | 19,748 | 48,060 | 41,343 |

* Manganese content only.
† Chromium content only.
‡ Silicon content only.

EXPORTS of iron and steel products out of the United States declined in February, having amounted to 151,184 gross tons, as compared with 178,028 in the preceding month. The decrease, however, was not particularly significant in view of the shorter working period. In February, 1933, exports totaled only 63,895 tons. Scrap continued to be the most active commodity, 75,884 tons having been moved out of the country during February, as compared with 87,272 tons in January and with 38,141 tons in February of last year. Export shipments of steel rails held up well at 10,648 tons, as compared with 11,871 tons in the preceding month. Most of this total has gone to Brazil. The outward movement of tin plate declined from 21,118 tons in January to 16,512 tons, but was far in excess of the 2905 tons exported in February, 1933. Japan and the Philippines were our best tin plate customers.

United States iron and steel imports rose from 22,653 tons in January to 25,407 tons in February, with pig iron as usual accounting for a large share of the tonnage. Of the 10,777 tons of iron received, the Netherlands supplied 5001 tons and British India, 4753 tons. Scrap importations increased sharply from 1160 to 4343 tons and there was also a heavier movement of merchant bars, structural shapes and hoops and bands.

### United States Imports of Pig Iron by Countries of Origin

(In Gross Tons)

| | February | | Two Months Ended February | |
|---|---|---|---|---|
| | 1934 | 1933 | 1934 | 1933 |
| United Kingdom | 50 | 150 | 50 | 150 |
| British India | 4,753 | 2,470 | 8,903 | 5,679 |
| Germany | .... | 34 | .... | 34 |
| Netherlands | 5,001 | 5,496 | 11,682 | 7,565 |
| Canada | 716 | 207 | 1,771 | 369 |
| France | .... | .... | .... | .... |
| Belgium | .... | .... | .... | .... |
| Norway | .... | .... | .... | .... |
| Sweden | .... | .... | .... | .... |
| All others | 257 | 59 | 257 | 1,063 |
| Total | 10,777 | 8,416 | 22,663 | 14,860 |

### Sources of American Imports of Iron and Manganese Ores

| | February | | |
|---|---|---|---|
| | Iron Ore | | Manganese Ore |
| | 1934 | 1933 | 1934 |
| Canada | 428 | .... | .... |
| Cuba | .... | .... | .... |
| Chile | 43,304 | .... | .... |
| Spain | .... | .... | .... |
| Sweden | .... | .... | .... |
| French Africa | 6,750 | .... | .... |
| Russia | 7,300 | .... | 802 |
| India | .... | .... | 535 |
| Brazil | .... | .... | .... |
| Africa | .... | .... | 780 |
| Other countries | 6,203 | *7,115 | .... |
| Total | 63,985 | 7,115 | 2,117 |

*Imported from Norway.

# ... PERSONALS ...

OTTO MUELLER has been appointed head of the newly created engineering and research department at the Ecorse frame plant of the Murray Corpn. of America. The department has been set up to serve the automotive industry in a consulting capacity on frame and heavy stamping problems. Mr. Mueller, who was educated at technical schools in Furtwangen, Germany, remained in the machine and stamping field in that country from 1919 until 1923, when he came to the United States. He was engaged in technical and designing work in various sections of the country until two years ago, when he joined the Murray corporation to engage chiefly in research and experimental work.

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ROBERT E. W. HARRISON, of Cincinnati, former sales engineering director of the Cincinnati Milling Machine Co., was appointed, the past week, chief of the industrial machinery division of the Bureau of Foreign and Domestic Commerce, by Willard L. Thorp, director of the Bureau. He succeeds W. H. Rastall who has accepted an executive position in the capital goods section, division of research and planning of the NRA.

Mr. Harrison has had wide experience in foreign markets and in engineering activities. After leaving the employ of the Cincinnati Milling Machine Co., in 1932, he established an engineering consultation practice and listed many leading engineering concerns among his clients. He also is the author of many technical papers presented before engineering societies both here and abroad.

❖ ❖ ❖

FRANK F. SEAMAN, general manager of the hoist and crane division of Robbins & Myers Sales, Inc., Springfield, Ohio, has been elected chairman of the Electric Hoist Manufacturers Association, New York. CARL O. HEDNER, of the Yale & Towne Mfg. Co., Philadelphia, has been elected vice-chairman.

❖ ❖ ❖

A. L. CLARK, who has been vice-president of the American Brake Shoe & Foundry Co. of California since 1922, has been elected president succeeding the late Thomas Finigan. Mr. Clark has been actively engaged in the foundry business since 1902, when he entered the employ of the Brake Shoe company as chief clerk at its Mahwah, N. J., plant. He entered the operating department in 1905 as assistant to the general superintendent. Four years later he was made superintendent of the Norwood, Mass., plant and in 1912, he assumed a similar position at the

OTTO MUELLER

Chicago works. The following year Mr. Clark was made superintendent of Western foundries and during the war period was acting works manager. He was made general manager of the California subsidiary in 1921, and vice-president in 1922.

❖ ❖ ❖

ANDREW B. HOLMSTROM, who has been associated with the Norton Co., Worcester, Mass., for more than 15 years, has been appointed works manager of the Norton Grinding Wheel Co., Ltd., Welwyn Garden City, Hertsfordshire, England, succeeding FRANK M. RYAN, who has been made assistant to HERBERT A. STANTON, now European manager of the Norton company with offices in London.

❖ ❖ ❖

L. G. SEVER has been appointed vice-president and manager of sales of the Mount Vernon Car Mfg. Co., Mount Vernon, Ill.

❖ ❖ ❖

J. M. FRANK, president of the Ilg Electric Ventilating Co., Chicago, has been elected president of the National Association of Fan Manufacturers. C. A. BOOTH, vice-president of Buffalo Forge Co., Buffalo, has been made vice-president of the association and E. B. CRESAP, Chicago, has been reelected secretary.

❖ ❖ ❖

L. CLIFFORD GOAD has been appointed general manager of manufacturing of the AC Spark Plug Co., Flint, Mich., a newly-created position. He has been associated with General Motors Corpn. for 11 years. He started with the Delco-Remy Corpn. as an engineer in 1923, serving successively as a foreman, assistant superintendent of the motor plant, chief process engineer and superintendent of the battery plant. He is a graduate of the University of Illinois.

❖ ❖ ❖

J. B. TAYLOR, JR., has recently joined the sales force of the Highland Iron & Steel Co., Terre Haute, Ind., and will work out of the Chicago office under the direction of E. J. MURRAY, district sales manager. Mr. Taylor is a graduate of Cornell University and has recently spent several months at this company's mill doing research and production work.

❖ ❖ ❖

PROF. M. L. ENGER has been made dean of engineering at the University of Illinois, succeeding acting dean ARTHUR CUTTS WILLARD, who will become president of the institution on July 1. Professor Enger has been a member of the University of Illinois faculty since 1907, and head of the department of theoretical and applied mechanics since 1929.

❖ ❖ ❖

F. H. CHAPIN, president, National Acme Co., Cleveland, has been elected vice-president of the Cleveland Chamber of Commerce. The new president is Herman R. Neff, president, George S. Rider Co., engineer and architect. New directors include R. C. NORTON, treasurer, Oglebay, Norton & Co., and N. H. BOYNTON, general sales manager, incandescent lamp department, General Electric Co.

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E. F. Ross, Penton Publishing Co., Cleveland, was elected chairman of the Cleveland chapter, American Society for Metals, at its annual meeting April 9. HARRY B. PULSIFER, Ferry Cap & Set Screw Co., Cleveland, was elected vice-chairman and GORDON T. WILLIAMS, Cleveland Tractor Co., secretary-treasurer. Five new members elected to the executive committee were: A. C. DENISON, Fulton Foundry & Machine Co., WILLIAM E. STEINWEDELL, Gas Machinery Co., CHARLES A. HEIL, Carpenter Steel Co., FRED W. KREBS, Super Steels, Inc., and ALLEN M. THURSTON, East Ohio Gas Co.

❖ ❖ ❖

H. STANLEY ROGERS has been elected president of American Shear Knife Co., Homestead, Pa., manufacturer of shear knives and steel mill forgings. Mr. Rogers has been associated with the steel business for 20 years. For the past 11 years he has been a director and manager of plant operation of the Heppenstall Co., prior to which he was connected with Jones & Laughlin Steel Corpn. S. C. STINER, formerly with the Heppenstall company, is a sales representative of the American Shear Knife Co.

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WILLIAM W. COLEMAN, president, Bucyrus-Erie Co., South Milwaukee,

Wis., sailed April 5 for Europe to be absent about a month.

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DONALD R. DOHNER, formerly director of art in the engineering department of Westinghouse Electric & Mfg. Co., and ALEXANDER J. KOSTELLOW, professor of industrial design, Carnegie Institute of Technology, have established offices at 99 Vandergrift Building, Pittsburgh, where they will engage in industrial design and research service.

❖ ❖ ❖

C. J. RAMSBURG, vice-president, Koppers Co., Pittsburgh, has been appointed administration member of the code authority for the machine tool and equipment distributing trade. He succeeds A. C. COOK.

❖ ❖ ❖

WILLARD D. WARD, associated with Carroll S. Smith, consulting engineer, 33 Rector Street, New York, has been appointed administration member of the code authority for the machine-allied staple and stapling machine industry. For more than 20 years, Mr. Ward was connected with the Pelton Water Wheel Co., San Francisco, as departmental head and eastern representative. He also was formerly a sales manager for the Cramp Shipbuilding Co., Philadelphia.

❖ ❖ ❖

HOMER L. MUELLER has been appointed vice-president and general sales manager of the Cleveland Welding Co.

❖ ❖ ❖

JOHN F. HACKETT, since 1920 general manager of the Riverside Metal Co., New York, has been elected vice-president. For the preceding seven years, he was superintendent of the Seymour Mfg. Co.

❖ ❖ ❖

J. A. BOUSLOUGH has been made Pittsburgh district representative, with office at 606 North Avenue, Wilkinsburg, Pa., for the Sheffield Machine & Tool Co., Dayton, Ohio.

❖ ❖ ❖

GEORGE A. PUGH, formerly vice-president of the Aetna-Standard Engineering Co., Youngstown, sailed for Europe April 1 on a short business trip.

❖ ❖ ❖

DAVID ADAMS, who has been identified for the past four years with the Falk Corpn., Milwaukee, has been appointed Pittsburgh district sales manager, succeeding W. O. BEYER, who recently resigned to become a member of the Pittsburgh Civil Service Commission. Mr. Adams was formerly connected with the National Malleable & Steel Castings Co., Bucyrus, Ohio, in charge of foundry and sales.

CHARLES E. WILSON, vice-president, General Motors Corpn., Detroit, will speak at the April 19 meeting of the Pittsburgh section of the Society of Automotive Engineers. Mr. Wilson's paper will be of special interest to executives in the steel industry and the Pittsburgh Chamber of Commerce is joining in the meeting.

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GEORGE J. BRESTH, George J. Bresth Co., Lowell, Mass.; W. G. MITCHELL, W. G. Mitchell Co., Marblehead, Mass.; W. H. LANE, W. H. Lane & Son, Portland, Me.; H. COHEN, H. Cohen & Co., Chelsea, Mass., and M. KAFKER, Luria Bros. & Co., Inc., Boston, were elected to constitute the New England code authority of the scrap iron and steel industry at a meeting in Boston, March 29.

❖ ❖ ❖

DR. N. I. STONE, commercial engineer, has been named administration member of the code authority for the scrap iron and non-ferrous industry. Dr. Stone was selected by the former director of the division of research and planning to be one of NRA'S group of economists and to act as deputy economist for the service industries.

❖ ❖ ❖

EUGENE L. PEREA, formerly with the United States Steel Products Co., and agent for the Republic Steel Corpn., has been appointed general manager for Fabrica de Tubos Mexico, S. A., at Comonfort 45, Mexico City, maker of light walled tubes and conduit pipe.

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A. L. HUMPHREY, chairman, Westinghouse Air Brake Co., and H. S. WHERRETT, president, Pittsburgh Plate Glass Co., were elected to the board of directors of the Westinghouse Electric & Mfg. Co. at the annual stockholders' meeting on April 11. Directors reelected were JEROME J. HANAUER, W. L. MELLON, F. A. MERRICK, GEORGE M. VERITY, and WINTHROP W. ALDRICH.

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T. P. ANTHONY has resigned as chief engineer of the United States Pipe & Foundry Co., Burlington, N. J. EDWARD HERING, heretofore assistant engineer, has been made acting chief engineer.

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## Late Advances on Alloy Steel and Wire Products

Alloy steel bars and alloy steel blooms, billets and slabs have been advanced $2 a ton, bars to 2.55c. a lb., Pittsburgh, Chicago, Buffalo, Massilon or Canton, and semi-finished to $51 a gross ton at the same basing points. The latest filings on wire products advance bright wire $2 a ton to $2.30 a 100 lb., barbed wire $3 a ton to $3 a 100 lb., bale ties $5 a ton to $63 a net ton. The advance on wire nails, $5 a ton to $2.60 a keg, is the same as contained in the original filings. These prices are f.o.b. Pittsburgh, other basing points taking the usual differentials.

## Preliminary Program of Zinc Institute Meeting

THE 16th annual meeting of the American Zinc Institute, will be held at the Statler Hotel, St. Louis, April 30 to May 1. Following is the tentative program:

MONDAY, APRIL 30

Registration

*Morning Session, 10:30 A. M.*

Address of Welcome.
Response—H. S. Wardner.
Remarks of the President.
Treasurer's Report—H. I. Young.
Report of Nominating Committee.
Report of Traffic Committee.
Communications.
Review of World Zinc Conditions—Oliver Roskill, London, England.
Announcements—E. J. Greve, Chairman, Arrangements Committee.

*Afternoon Session, 1:30 P. M.*

Election of Directors, to serve until April, 1937.
Development of the Zinc Code—J. D. Conover, Secretary, American Zinc Institute, Inc.
Organization of the Zinc Institute and its Relation to the Proposed Code—R. M. Roosevelt, president, American Zinc Institute, Inc.
Discussion by the Code Committee.
General Discussion.

*Annual Banquet and Smoker, 7:00 P. M.*

TUESDAY, MAY 1

*Morning Session, 10:00 A. M.*

Progress Reports on the Better Galvanizing Campaign, by the Institute's staff:
The "Seal of Quality" Campaign in the Field—Charles Matthews, field representative.
Getting the Facts about Zinc Coatings—G. C. Bartells, technical representative.
Pushing a Good Thing Along—K. J. T. Ekblaw, agricultural engineer.
Consolidating the "Seal of Quality" Campaign—J. D. Conover, secretary.
The Steel Man's Viewpoint of Better Galvanizing—J. L. Schueler, Continental Steel Corporation.
The Consumer's Interest in Better Galvanizing—Prof. H. W. Riley, New York State College of Agriculture.

*Board of Directors Meeting, 1:00 P. M.*

*Afternoon Session, 2:00 P. M.—Review of Zinc Mining Conditions*

Washington—L. P. Larsen, Pend Oreille Mines and Metals Company.
Idaho—D. A. Callahan, Callahan Zinc-Lead Company.
Montana—W. B. Daly, Anaconda Copper Mining Company.
Nevada, Utah, Colorado—E. H. Snyder, Combined Metals Reduction Co.
New Mexico, Arizona—E. H. Wells, New Mexico School of Mines.
Oklahoma, Kansas, Missouri—M. D. Harbaugh, Tri-State Zinc and Lead Ore Producers Association.
Wisconsin—R. B. Keating, Vinegar Hill Zinc Company.
Tennessee—M. H. Newman, American Zinc, Lead and Smelting Company.
Virginia, New Jersey—R. B. Paul, New Jersey Zinc Company.
New York—C. R. Ince, St. Joseph Lead Company.
Manitoba—R. E. Phelan, Hudson Bay Mining & Smelting Company.
British Columbia—S. G. Blaylock, Consolidated Mining & Smelting Co.

# THE WEEK IN WASHINGTON

# NRA Reorganization Paves Way For Greater Industrial Self-Government

## *Publicity Campaign Planned to Popularize New Code Eagle*
## *Industries Encouraged to Set Up Own Labor Boards*

By L. W. MOFFETT
Resident Washington Editor
THE IRON AGE

WASHINGTON, April 17.—Borrowing a term used by one of its members, "revitalizing" of the NRA is getting under way. Reorganization of the Compliance Division has been completed in preparation for the enforcement drive. The Blue Eagle is to be kept aloft after April 30, and another species, the code eagle, is to be perched by its side.

Boiled down, the primary purpose of NRA appears to be to greatly simplify its machinery. To this end it is preparing to pass over to industry the job of much greater self-government. It has been seen for a long time that NRA was getting bogged down. Complications and ramifications almost without end have developed. Codifying the vast machinery of a highly industrialized nation has proven to be a titanic undertaking. Its magnitude likely was never conceived at the outset by any single individual or group of individuals or organization. Nor has "codification" been completed by any means. While NRA estimates that 90 per cent of industry from a point of employment has been brought under codes, this does not reflect the actual situation. For codes are constantly being attacked, they are always subject to amendment and constant changes, and many may be greatly changed, almost to the point of being rewritten. So that it hardly can be said the large percentage given really represents the progress made in "codification."

Yet, as difficult as the coding process has been and still is, the NRA has found that it was faced with a still harder one as it penetrated more deeply into the administrative field. Strikes and threatened strikes, generally centering around the collective bargaining section of the Recovery Act, beset the NRA in growing numbers and kept it and the National Labor Board in a state of high tension. Criticisms over various other phases of codes, alleged price fixing, etc., began to come in in increasing volume. Industries became entangled from within and often had sharp differences over codes just as competing industries became enmeshed in rows over provisions in different codes which were held to be conflicting or to overlap. Consumers often became dissatisfied with sales policies instituted under codes of their suppliers. The cry that small enterprise was being oppressed was raised. Likewise complaint, though less vociferous, was made by the larger enterprises that instead of oppressing small enterprise the latter was given advantages that worked to the injury of the former. Charges of violations piled up fast. Many of these conditions still obtain and some actually are becoming more critical. The labor situation particularly is a cause of much apprehension, despite the strenuous efforts of the White House, the NRA and the National Labor Board to bring about peace between labor and industry. The White House formula to settle differences in the automotive industry generally has been looked upon as a statesmanlike effort; yet serious threats of labor trouble prevail in the automotive industry and in other industries not having such a formula. The "gold fish" bowl hearings for the public brought out many criticisms of NRA. The subsequent code authority conferences made it clear that industry as a whole was far from agreeing that it could boost wages 10 per cent and reduce hours to the same extent.

### Enforcement Drive Started

They did give a clear idea as to the need of reorganizing the NRA and simplifying its job to keep it from getting into heavier seas and to stimulate renewed confidence in it. So the drive for enforcement has been staged following reorganization. Reorganization has been effected along lines that have a military aspect with its administrative staffs set up with full authority and responsibility for decisions and with Colonel George A. Lynch made administrative officer to approve smaller codes, to take charge of the entire office organization and to have

broad powers of administration. It is not only a form of decentralizing NRA but it is a move toward passing over to industry the job of governing itself to a greater degree. The enforcement drive is the advance move to clear up violations as far as possible so that industry will take over the task with some of the load off its shoulders. More self-government in industry is held to be necessary—really to be the supposed spirit of the Recovery Act itself—both to industry and the NRA for without industry's aid there is a growing doubt that the NRA can fulfill its task. One of the purposes is to have each industry set up its own labor board to handle disputes and if this plan works it will take a big burden from NRA. The labor boards in the bituminous coal and textile industries have given a good account of themselves and thus encourage the belief that similar boards in other industries would do likewise. The critical condition in the bituminous coal industry arising from new wage adjustments was not so much of a dispute between miners and operators as it was between competing operators themselves so that it does not reflect on the work of the National Bituminous Coal Labor Board.

### Publicity Campaign Looms For Code Eagle

The campaign to establish the Code-Eagle apparently is to be tied in with a publicity program to "revitalize" the NRA. It is reported that the Code Eagle will be released from its aerie by the President in a radio address and that much publicity will follow under the direction of Charles F. Horner, the publicity artist who had charge of the Liberty Loan campaigns and the Blue Eagle ballyhoo. The idea of a code eagle is to provide an eagle with a serial number for each industry. Violators or alleged violators will not get the bird. Hence this is a part of the enforcement drive. Also those not coming to taw with financial support of code authorities will be deprived of the code eagle.

Under the new set-up, the NRA compliance division will act as a clearing house for unadjusted cases sent in from the field, according to an NRA announcement, and for complaints of alleged code violations filed directly with NRA headquarters. Complaints will be referred back to State Directors or to the enforcement and litigation section for action. All cases docketed will be followed until they are settled by court decision or other adjustment.

The program throws heavier responsibilities upon the National Compliance Board and in order that William H. Davis, its chairman, may devote his full time to the increased duties, he has been relieved as national compliance director, a post that, with that of assistant national compliance director, which has been abolished.

### Personnel of New Compliance Division

In charge of the new compliance division is A. J. Altmeyer, formerly an assistant national compliance director in charge of the now-abolished labor branch. Frank Healy, also formerly an assistant national compliance director, has been made chief of the Government contracts and competition section of the division. The latter section will handle complaints that bidders for Government contracts are violators of codes or agreements to which they will be subject. Other shifts in the division include abolition of the trade practice branch with its former chief, J. Marshall Mayes, assigned to continue duties as liaison officer with the Federal Trade Commission; the creation of an analysis branch with William M. Galvin, formerly an assistant counsel, in charge of analyzing all complaints; and the appointments of William Jay Hoff, former assistant chief of the administrative branch to be its chief, and John Swope, to be chief of the field branch. Kilbourne Johnston, son of General Johnson, will devote his entire time to duty as aide to the National Recovery Administrator.

Related to the enforcement policy is said to be a new announcement on monopolies and labor which General Counsel Donald Richberg of NRA is reputed to have drafted following a conference he and General Johnson had with President Roosevelt. Nothing has been given out as to what this policy will be though it is reported it will reflect a broader attitude toward the anti-trust laws and less strict Government supervision, at the same time being designed to prevent monopolies. Also, rather refreshingly, if true, it is reported that labor will be charged with increased responsibility in its dealing with both the Government and industry. The character of the responsibility is not known, but it is alleged that while it will not be of a financial nature, as has been urged often by industrialists, it will be of real substance.

### National Recovery Review Board's Attitute Critical

This idea of greater freedom from the anti-trust laws and laying real responsibility on labor, however, does not fit in with the congenital conceptions of the National Recovery Review Board, headed by Clarence Darrow. This organization which rightly or wrongly is represented as being prepared to come forth with a blast against its own parent, the NRA, plainly is strongly saturated with socialistic ideas. These ideas run counter to any principle that would mean further relaxation of the trust laws and that would hold labor to account were it to violate the law. Unfortunately, it is reported that the board may have a great deal of influence in shaping the future policy of the NRA.

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# Code Doings And Undoings

## Sheet Metal Contractors Protest Piping Code

THE scope of work sought to be included under the definition of a revised code submitted by the heating, piping and air conditioning contractors' industry was the object of a protest by W. C. Markle, Pittsburgh, secretary of the National Association of Sheet Metal Contractors. At a hearing on the code last Thursday before Assistant Deputy Administrator F. H. Weed it was stated by Mr. Markle that one section of the code covered duct installations which already are included in the code for the roofing and sheet metal contracting division and that his group would vigorously oppose any change in present conditions. The revised code is offered as a supplement to the master code for the construction industry. Joseph C. Fitts, New York, secretary to the National Association of Heating Contractors, said the present code had been drafted with the help of advisers in the NRA and he expressed the belief that it is "perfectly fair to both groups of contractors." Additional protests against the proposed code were made by A. W. Berresford, New York, managing director, National Electrical Manufacturers' Association; Gilbert H. Montague, New York, Baldwin Locomotive Works; John W. O'Leary, Chicago, Machinery and Allied Products Institute; W. S. Shipley, York, Pa., president, New York Ice Machinery Corpn., and James D. Andrew, New York, manager, American Boiler Manufacturers' Association.

### Crane Code Hearing April 27

A hearing on the proposed code supplementary to the code for the machinery and allied products industry will be held on April 27 before Acting Deputy Administrator L. J. Martin. The industries proposing the divisional codes are the electric overhead crane industry, sponsored by the Electric Overhead Crane Institute, and the locomotive appliance industry, sponsored by the Locomotive Appliance Institute. Both codes, adopting the wage, hour and labor provisions of the basic code, provide for administration, uniform cost accounting systems, ban selling below cost and set up general fair trade practices.

Deputy Administrator Kenneth Dameron will preside at a hearing April 28 on the proposed supplemental

code for the secondary steel products warehousing trade, a subdivision of the wholesaling or distributing trade. The proposed code is sponsored by the National Association of Distributors of Secondary Steel Products, claiming to represent 94 per cent of the volume of trade. It provides for the creation of a separate code authority for this subdivision of the trade and for addition to the trade practice provisions of the basic code concerning terms of sale.

The road machinery manufacturing industry, which applied for new regulations governing resale values of second-hand or trade-in equipment, on April 11 was granted a 90-day approval of its proposed schedule amending an article of the approved code for the industry. By this amendment the resale value of such second-hand equipment shall be computed on the basis of the length of time which has elapsed between the date of the original purchase and the date of sale, ranging from 10 per cent for machinery 36 months old to 75 per cent of the original price for equipment under six months in use.

On April 30, a hearing will be conducted on amendments to the approved code of fair competition for the machine-applied and stapling machine industry. The amendments submitted by the Code Authority for the industry, deal with the printing or stamping of containers used by members of the industry. At the same hearing the administration will consider the testimony of several members of the industry who wish to have control of these articles stricken from the code altogether. The firms which have protested against these articles are Consolidated Staple Co., Inc., Majestic Staple Co., Inc., Commander Sales Co., and Lipke Tool Works, all of New York City.

A hearing will be conducted April 27, by L. J. Martin, acting deputy administrator, on amendments proposed to the approved code of the machinery and allied products industry. The temporary basic code Authority sponsors the modification, which is intended to add three new subdivisions to the M. A. P. I. code. They are: chemical engineering equipment subdivision; electric overhead crane manufacturing subdivision; locomotive appliance subdivision.

The National Recovery Administration has announced that an amendment to the approved code for the construction industry, under which permission would be granted for the incorporation of the construction code authority and each divisional code authority, has been approved. The amendment provides that the existence of the corporation shall be during the term of the code or of the individual chapter affected, and that the certificate of incorporation and by-laws shall be subject to the disapproval of the administrator.

# President Authorizes NRA To Act Upon Code Dues Collection

WASHINGTON, April 17.—The White House order of last Saturday authorizing the National Recovery Administration to approve collection of code administration costs from members of industry was a further move to tighten enforcement of codes by industry itself. It also was designed to remove racketeering by organizations which have been set up and lived rather luxuriously off assessments from employers. The Presidential order requires approval of code authority rates of assessments and budgets of expenditures by General Hugh S. Johnson before collection can be made. Unless collections are forthcoming defaulting members of codes will be deprived of their Blue Eagle.

The turning of the NRA into an overseer of collections is a new shift, and one NRA has long opposed. It will mean a greater job on the organization. Nevertheless, it was a natural development in view of the difficulty of some industries in collecting assessments and also because it was held to be necessary to eliminate practices that had grown up through provisions for prior approval of rates and budgets.

Coming simultaneously with the Presidential order was one promulgated by the NRA which outlines procedure under which rates and budgets will be approved. The Administrator's order pointed out that with certain exceptions members of several codified industries will be assessed for the support of the code authority representing their principal line of business.

It is required by the Administrator's order the code authorities give prescribed notice to all industry members and allow a 15-day period for protest against assessment. In cases where no protests have been made payment of assessments is necessary under penalty of losing the Blue Eagle.

Apparently a precursor to the forthcoming code eagle, the White House order requires that before collecting assessments code authorities must get approval of their budgets by Administrator Johnson. This provision is intended to stop abuses which have been brought to the attention of the NRA in increasing number whereby excessive salaries were paid to members of code authorities. Heavy assessments were made against employers in order to pay these salaries. It is reported that this practice prevailed to a greater extent among the smaller industries than among the larger ones, most of the latter being required to make only reasonable contribution to support costs of administration by code authorities who are charged with heavy responsibilities.

The Administration has reluctantly taken over the job of checking on assessments, but it was held to be necessary if non-paying members of codes were to be brought into line and if the enforcement drive is to succeed.

The NRA order was signed by Col. G. A. Lynch, administrative officer, in the absence of General Johnson.

The President's Executive order states:

"1. It being found necessary, in order to support the administration of this code and to maintain the standards of fair competition established by this code and to effectuate the policy of the act, the code authority is authorized, subject to the approval of the administration:

"(A) To incur such reasonable obligations as are necessary and proper for the foregoing purposes and to meet such obligations out of funds which may be raised as hereinafter provided and which shall be held in trust for the purposes of the code.

"(B) To submit to the administrator for his approval, subject to such notice and opportunity to be heard as he may deem necessary, (1) an itemized budget of its estimated expenses for the foregoing purposes, and (2) an equitable basis upon which the funds necessary to support such budget shall be contributed by the members of the industry.

**Court Action Provided**

"(C) After such budget and basis of contribution have been approved by the administrator, to determine and secure equitable contribution as above set forth by all such members of the industry, and to that end, if necessary, to institute legal proceedings therefore in its own name.

"2. Only members of the industry complying with the code and contributing to the expenses of its administration as provided in section 1 hereof shall be entitled to participate in the selection of the members of the code authority or to receive the benefit of its voluntary activities or to make use of any emblem or insignia of the National Recovery Administration."

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# Scrap Prices Unchanged At Detroit

DETROIT, April 17.—Consumer buying of scrap has continued to be quiet and prices are leaning toward the weaker side, although actual changes have not occurred. Old material is moving out of Detroit by boat to Cleveland and Lorain, Ohio, in greater volume than a week ago. The uninterrupted flow of scrap into the market from southern Michigan automobile plants is expected to act as a brake to check any possible tendency for prices locally to strengthen.

# PWA Signs $3,600,000 New Haven R. R. Loans

WASHINGTON, April 17.—Contracts for two loans totaling $3,600,000 to the New York, New Haven & Hartford Railroad were signed last Friday by Public Works Administrator Harold L. Ickes. One contract was for a loan of $1,300,000 for the purchase of 25,000 tons of rails, costing $983,000, delivered, while 40,026 pairs of joints will cost $158,276. The balance will be spent for tie plates, and other track fastenings and accessories. The other loan of $2,300,000 is to be used for the purchase of new passenger equipment, of which $2,000,000 will be spent for 50 de luxe day coaches and $300,000 for a high-speed, streamlined train to operate between Boston and Providence, R. I. The day coaches will be built in the Pullman-Osgood plant at Worcester, Mass., and are to be turned out at the rate of five cars per week, beginning the last of August. The high-speed train will consist of four cars, two of which will be powered with Diesel electric plants. The PWA some time ago made a loan of $3,500,000 to the New Haven.

The Interstate Commerce Commission has approved an application of the Gulf, Mobile & Northern Railroad for authority to borrow $1,000,000 from the PWA to be used for the purchase of 150 50-ton, 50 composite 50-ton gondola cars, two passenger and two observation sleeping cars and four motor cars equipped with 600-hp. Diesel engines.

The New Haven contracts brought to $171,272,000 signed for loans to 23 railroads. PWA had then allotted $199,607,800 for such loans and contracts covering the balance of $28,000,000 were in course of preparation.

## Retail State Sales Tax Decision

A STATE retail sales tax cannot be imposed on sales by jobbers to manufacturers of machinery, tools and other supplies used in connection with production processes, according to a decision in the Michigan Circuit Court at Detroit in a suit brought against the State by the Boyer-Campbell Co., wholesale jobber in factory supplies, and 50 intervening plaintiffs. The decision took into consideration a resolution passed by the legislature stating that it was not the intent to tax tools and materials needed in manufacturing processes. The State Board of Tax Administration chose to ignore this resolution and adhere to the letter of the law. The decision protects Michigan companies from competition from suppliers outside the State who could undersell them because their goods were not subject to the 3 per cent tax.

## Molders' Union Gets Ten Per Cent Pay Rise

WASHINGTON, April 17.—Effective June 18 to the end of the year, successful conclusion of a collective bargaining agreement providing for a 10 per cent wage advance to molders and coremakers has been reported to the National Labor Board by the International Molders' Union and the Manufacturers' Protective and Development Association. In notifying the board, Lawrence O'Keefe, president of the International Molders' Union, said: "This was satisfactory to both sides and our agreement of over 40 years' standing is again renewed. The association is the manufacturers' organization in the stove industry and with the molders' union promulgated the first national wage agreement announced in the United States.

This year they were unable to make an agreement and so reported to the National Labor Board. At a hearing on Jan. 23 both sides asked the board to impose a uniform wage scale on the industry as a whole, particularly on manufacturers not members of the association. On March 2 the board advised them it was without power to do this and deprecated any interruption of their long-established practice of collective bargaining. The board recommended renewal of the wage conference which began in New York on April 6. The new agreement was the result.

## Whitney Blake Labor Dispute Settled

WASHINGTON, April 17.—Agreement between the Whitney Blake Co., Hamden, Conn., wire manufacturer and the Wire Workers' Local 18,915 affiliated with the Connecticut State Federation of Labor, has been announced by the National Labor Board and provides for an immediate meeting in Hamden between the management and a committee from the union to deal with a dispute involving the return of approximately 85 strikers. The agreement calls for checking of the list of strikers against the payroll for the week ended Oct. 7, 1933, employees to be divided into two classes, those whose names appeared on the payroll the week ended Oct. 7, and those employed since that time, the former to be reinstated if they wish not later than April 23, unless these positions no longer exist. If not, they are to be given similar positions and to return to work at rates not less than those received at the time of the strike. In order to give reinstated employees these positions, new employees will be either discharged or transferred, if necessary. A representative of the National Labor Board is to decide as to whether old employees are to be reinstated. None of them is to be permanently discharged without right of review by a representative of the board whose decision is to be final, nor to be discriminated against in the matter of layoff or distribution of work. Questions of interpretations are to be submitted to the board for final decision.

## Wagner Bill Appears Defunct

WASHINGTON, April 17.—While no official statement is forthcoming it is reported that the Wagner labor bill will be dropped for the present session at Congress at least. It is said this was agreed upon at the White House conference President Roosevelt held last Saturday and Sunday with Senate and House members. Whether or not the bill will be given administration endorsement for action at the session in December was not indicated. The President never has gone on record with regard to the Wagner bill. Nevertheless it not only met with stout opposition from industrialists and employees of individual unions, including those in the iron and steel industry, but certain features were opposed by General Hugh S. Johnson. The opposition of General Johnson to the clause which would abolish company unions was expressed in a letter he addressed to Senator Wagner, author of the bill. This opposition was looked upon as a strong blow against the measure, despite claims of proponents that General Johnson had endorsed the bill. His "endorsement" was only in the nature of urging the creation of a permanent National Labor Board. Otherwise his stand was against other important features of the bill.

The measure also was given a blow when many employees belonging to steel company unions appeared before the Senate Committee on Education and Labor and expressed opposition that was even more vigorous than that of steel executives and other large employing interests. The Connery 30-hr. bill also has been dropped from the legislative program for the session.

# Durable Goods Committee Condemns Securities Act

WASHINGTON, April 17.—President Roosevelt at White House conferences last Saturday and Sunday at which the legislative program for the present session of Congress was outlined asked for enactment of a stock market control bill with "teeth" in it, according to reports made by Congressional leaders attending the conferences. Chairman Rayburn of the House Committee on Interstate and Foreign Commerce said that the President wants a regulation measure stronger than the modified Fletcher-Rayburn bill, and the House Committee together with the Senate Committee on Banking have renewed work on the measure. The President, according to Mr. Rayburn, is in favor of margin requirements being written into the bill. The Senate Banking Committee, upon motion of Senator Carter Glass of Virginia, eliminated the fixed margins last week and left to an independent commission of three the fixing of margins. Amendment to the Securities act was said to have been listed as vital legislation for passage at the present session.

This position of the administration comes upon the heels of the report of the Committee on Durable Goods which saw securities legislation as the obstacle to investment in securities which are floated for capital goods investment.

Headed by George H. Houston, president, Baldwin Locomotive Works, the committee, pointing out that in normal times the capital goods industries employ more than 50 per cent of all labor engaged in manufacturing, discovered that since the depression only 4 per cent of the normal amount of new capital has been secured for durable goods while in Great Britain new capital for the same industries has risen to 54 per cent. The committee said it also had definitely discovered that with new capital insured for these industries between 5,000,000 and 6,000,000 persons now unemployed in these lines can be permanently reemployed.

### No Recovery Without Amendment

"Without amendment to the Securities act of 1933 at this session of Congress the committee agrees unanimously that any recovery is only temporary and not permanent," the report said.

Requirements for even partial recovery in capital goods industries were listed as follows:

(1) The restoration of confidence in the Government's future policies.

(2) The opening up of channels for the free flow of private savings into normal investments.

(3) The breaking open of the frozen mortgage situation and the creation of new forms of real estate financing.

Giving its attention to the matter of opening up of the investment market, the committee declared that the Securities exchange bill of 1934 has threatened a serious interference to recovery.

It is pointed out that in the 10 years prior to 1930 the volume of new capital moving into enterprise in the United States was about $4,000,000,000 per year. In 1933 this had been reduced to $160,000,000 or about 4 per cent of this annual average.

Moreover the current accumulation of savings in the country, the committee said, are being drained into a new channel as indicated in the following:

"(1) Since 1930 a constantly increasing proportion of the national income and of national savings has been distributed or spent through Governmental channels.

"(2) In the past four years the Federal Government alone, through the increase in the debt outstanding, has absorbed about twice as much of the new private savings and bank credit of the nation available for investment, as have been absorbed by all private industry and business.

"(3) In 1933 about a third of the total national income produced was taken and distributed in governmental channels, including Federal and all other governmental agencies.

"(4) In 1934 it is estimated that about 40 per cent of the total national income produced will be used in this way.

### Nationalization of Wealth

"When these factors are studied in connection with the many legislative emergency measures of the past year, the conclusion is clear that, perhaps without conscious intent, we are gradually enforcing the nationalization of productive wealth. Increasing amounts of Government money in productive enterprise must inevitably result in an increasing degree of direction, regulation, control and operation by Federal agencies. In our desperate need and haste to stop the depression we have failed to clearly realize this fact.

"We believe we express the viewpoint of all industry when we point out the necessity of turning this great river of private savings back into private business and then gradually relieve the Government of the burden it has assumed. A revision of the Securities act of 1933 by the present Congress would go a long way toward accomplishing this purpose with the resultant stimulation of the durable goods industries and the opening up of many new opportunities for employment of men now being supported by direct governmental relief or artificial work created by Government expenditures."

# Titanium Alloy Mfg. Co. Produces New Deoxidizer

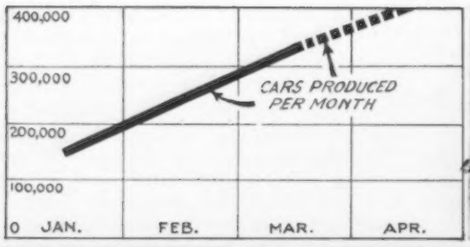
A new ferro-carbon-titanium alloy has been announced by the Titanium Alloy Mfg. Co., Niagara Falls, N. Y. This new product is known as TAM Low Carbon FCT, and is particularly useful for alloy additions to soft steels which finish about 0.06 per cent carbon, such as deep drawing and high finish automobile stock, and ingot iron. The original TAM FCT contained about 7.5 per cent carbon, but the later development is said to produce better and stronger steels, and effect much higher production yields.

# Steel Price Changes

NEW lowest base prices filed with the American Iron and Steel Institute include the following:

| Product | Base Price Per G. T. | F.o.b. Basing Point |
|---|---|---|
| Ingots uncropped rerolling quality carbon steel (effective April 15) | $29.00 | Cleveland |
| (Effective April 14) | 29.00 | Gary |
| (Effective April 16) | 29.00 | Chicago |
| (Effective April 16) | 29.00 | Youngstown |
| (Effective April 20) | 29.00 | Buffalo |

| Product | Base Price Per 100 Lb. | |
|---|---|---|
| Tube rounds (effective April 19) | $1.95 | Chicago |
| (Effective April 21) | 2.05 | Birmingham |
| Cold-finished sheets, No. 20, mill run (effective April 22) | 3.75 | Pacific Coast Ports |
| Cold-finished sheets, No. 10, mill run (effective April 22) | 3.15 | Pacific Coast Ports |
| Copper-coated plate, No. 24 gage and heavier (effective April 20) | 3.94 | Pittsburgh |
| (Effective April 20) | 4.04 | Gary |
| Galvanized roofing and siding steel sheets with 2½ in. corrugations, 26 in. wide after forming, in lengths of 5, 6, 7, 8, 9 and 10 ft. (effective April 22). | Base Price Per Square | |
| No. 29 gage | $3.23 | Birmingham |
| No. 28 gage | 3.31 | Birmingham |
| No. 26 gage | 3.62 | Birmingham |
| No. 24 gage | 4.31 | Birmingham |
| No. 22 gage | 5.13 | Birmingham |
| No. 20 gage | 5.96 | Birmingham |
| No. 18 gage | 7.65 | Birmingham |
| No. 16 gage | 9.15 | Birmingham |
| Product | Base Price per 100 Lb. | F.o.b. Basing Point |
| Strip, hot-rolled (rail steel) (effective April 24) | $1.80 | Pittsburgh |
| Crown fender stock (effective April 23): | | |
| No. 17 gage and lighter | 3.70 | Worcester, Mass. |
| No. 16 gage and heavier | 3.40 | Worcester, Mass. |
| Lamp stock, No. 17 gage and lighter (effective April 23) | 3.80 | Worcester, Mass. |



# THIS WEEK ON THE

## Detroit Strike Threat Fades; April May Be Peak Month

DETROIT, April 17.

WITH the possibility of a strike in the automobile industry daily becoming more remote, although admittedly sporadic outbursts on the part of labor will continue indefinitely, motor car production this month will easily pass 400,000 units for the first time since May, 1930. There is a growing feeling in Detroit, however, that April may prove to be the peak month of the year.

This is no cause of alarm, because there is slight if any chance of a sharp drop in operations during the remainder of the current quarter. The number of unfilled orders on the books of low-priced car makers precludes such a slump. One of the leading manufacturers, for example, is privately declaring that it can sell every car which it is able to assemble during April, May and June. Its output in March came close to setting a record, yet its retail deliveries last month came within a few thousand units of equaling production.

The general feeling throughout the industry is that May assemblies will not be far distant from those of April and that June probably will bring a decline, although it will stay above the 300,000 level. It has been many years since field stocks of cars were as low as today, with the spring season already at hand, and even if retail sales begin to shrink somewhat in late May the need for building up a reasonable volume of dealers' stocks will keep operations at a relatively high rate until the end of the first half of the year.

### Rural Sales Active

Retail sales continue to have stanch support in the agricultural districts. Confirming this fact, the Ford Motor Co. says that "reports from all parts of the country indicate that rural dealers who have been more or less inactive for the last three years are again doing business on a scale comparable with 1929. Some of them report that their volume thus far this year is greater than in all of 1933." This stimulus, of course, is originating largely in Federal payments to farmers for curtailment of production.

The outlook for sales in industrial centers is not quite so bright. Detroit offers a good example. Over 250,000 workers now are employed in automobile factories in this city, yet this large group is not considered prospective buyers of cars. The employees have no financial backlog and no assurance regarding how long their present jobs will last. If they can keep at work through most of the four or five months immediately ahead and then have in prospect reasonably steady employment on 1935 models, which in some cases will come out early, they then may be in the market for cars. It should be remembered too that Detroiters are educated to use cars on every possible occasion, since this city is the motor capital.

### Cash Sales Increasing

It is an interesting commentary that the percentage of cash retail sales of cars is much higher than normal. It is no longer an exception for a buyer to hand a dealer $700 in cash for a new car. This trend toward cash business is attributed to two factors—the feeling on the part of many people that they might as well spend their money, last year's banking debacle still being fresh in mind, and the money being poured into various channels by the Federal Government.

It is no exaggeration to say that finance companies are worried about their loss of business because of the large volume of cash transactions. One company in particular is planning a campaign urging dealers to "tap the dormant time-payment market."

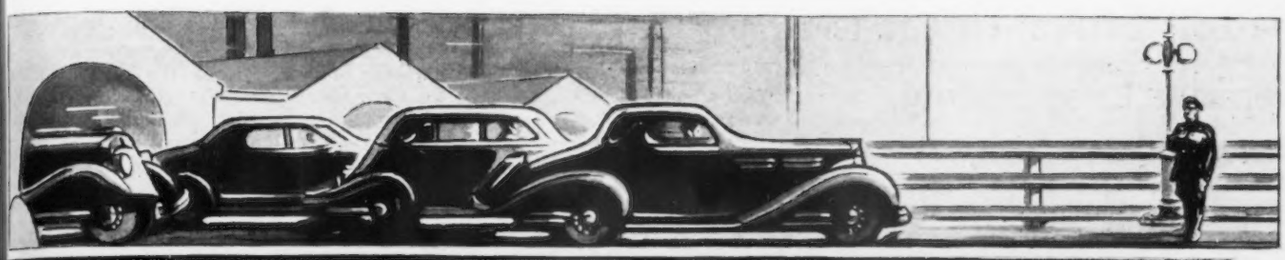
One thing which perhaps may be cutting down the proportion of installment sales is the absence from the industry today of what may genuinely be termed a low-price car. The higher the price of a car is, the more its sale is restricted to a "better-income" class of buyers which is less inclined to purchase on a time-payment basis. It is practically impossible to buy a car in Detroit today for less than $650 to $700 delivered. This automatically eliminates a tremendous number of people able to pay $400 to $500 for a car, but not $650.

It can be said with authority that Ford has not abandoned plans for a small V-eight to sell in a market now covered only by used cars. The Ford laboratories at Dearborn are quietly working to perfect this car, which will be held back until such time as Mr. Ford believes sales will sustain a production of about 5000 units a day. General Motors and Chrysler naturally will not let Ford invade this market without competition, and it may be that the real test for supremacy, the finish fight between the giants, will come when the leaders decide to put on the market a car designed for economical transportation and nothing else.

### April Outlook Promising

April output looks as promising as it did a week ago. In the first 10 days of the month Ford's orders exceeded production by 10,000 units, and if a sufficient number of bodies and parts can be secured, the month's total assemblies may go over 100,000 units. Chevrolet is expected to attain its goal of 127,000 units, but it appears doubtful that Chrysler in all its divisions will be able to get out 100,000 units as it had hoped.

In the first 14 weeks of 1934 Dodge Brothers delivered to retail customers 24,281 passenger cars and 10,646 trucks. Dodge production is running close to 20,000 units a month. For the third successive week Plymouth has broken all records for retail deliveries which were pushed up to 9007 for the week ended April 7. Chrysler Sales Corpn. shipped 23,950 Chrysler and Plymouth cars during March, the previous all-time high having been 23,573 units in August, 1929. Incidentally March was the



# ASSEMBLY LINE

By BURNHAM FINNEY
Detroit Editor, THE IRON AGE

largest month in the history of Chrysler Corpn. as a whole, from the standpoint of production and unfilled orders. Despite a slow start in January, shipments in the first quarter were the second best for any quarter in the history of the corporation.

Buick delivered 12,051 cars in the first quarter, as against 9672 in the same period of 1933. Graham-Paige has 3000 units scheduled in April, raising its total for the first four months of the year to 9000. Studebaker will make about 10,000 units this month.

Steel offices at Detroit are being deluged with contracts for steel at old prices. The duplication is understood to be very great, with users placing tonnages far beyond the amount they intend to specify. As one consumer admitted, "If I take out one-third of the tonnage for which I have contracted, I shall have on hand a stock twice as large as ever before in my company's history."

Although three steel sheet manufacturers catering principally to the automobile industry are now operating at full capacity, some mills still are in need of tonnage for immediate rolling.

### Equipment Buying Paralyzed

With a tool and die strike in independent shops in Detroit now in progress and with threats of local labor disturbances hanging constantly over the industry, equipment buying is virtually paralyzed. There is growing evidence, however, that manufacturers intend to start 1935 tooling programs earlier than usual to avoid getting into the jam which delayed production this year.

So much attention has centered on the labor situation that plans of General Motors Corpn. further to decentralize have attracted little notice. The B-O-P break-up has resulted in an untangling of dual dealerships within General Motors ranks which is still in progress. Indications are that each car division will be made as self-sustaining as possible from the standpoint of providing its dealers with a sufficient price range to insure a profitable trade without taking on outside makes.

Buick, for example, will shortly have for its dealers a car at $750-$800 to supplement its higher price line, thus doing away with the necessity for a link-up with Pontiac. Pontiac, on the other hand, is reported experimenting with a light six which may be offered next year to complement its straight eight series. Cadillac is said to be conducting experiments looking toward possible production in 1935 of a car in the $1,100-$1,200 class, thereby competing with the proposed light Packard and further invading Buick's market.

These developments point toward a much greater overlapping of General Motors cars in various price groups in 1935 than in several years. While on the surface this may seem to be inviting needless competition within one's ranks, it means greater coverage of the entire market and enlargement of the possibilities for securing a greater percentage of the total business.

Heavy production of motor cars is resulting in an actual shortage at the factories of railroad freight cars suitable for the transportation of automobiles. It is necessary temporarily to put into operation thousands of the older type automobile freight cars. Many of them have been standing idle for several years and are badly in need of being reconditioned. This cost is estimated at $50 a car.

### Rail Rates Reduced

To regain some of the automobile business which they have lost in recent years, railroads in western trunk line territory (north of Kansas City) and in southwestern territory (south of Kansas City) have reduced their haulage charges for finished motor cars to about 22c. a mile. This is practically the equivalent of the mileage cost for trucking new cars. The new rate, which applies on business for delivery up to 360 miles from the factory, gives the dealer the opportunity of getting his new stock delivered at his door at the same freight charge as by trucking. The rail mileage is generally considerably less than the highway mileage and this differential takes care of the expense at the end of the line for transporting cars from the freight depot to dealer's showrooms. The new schedule is designed especially for Chevrolet, Pontiac and Ford branch assembly plants. All steam carriers are watching with interest this experiment to see how much business it will bring back. If it proves profitable, it undoubtedly will be extended to other parts of the country.

The Ford Motor Co. is reported to have placed orders for the electric motors for its new continuous sheet mill and for a 7000-hp. motor for its roughing mill. It is understood that electric generator sets of larger capacity than the present ones will be installed. New boiler room equipment is likely to be purchased.

### Detroit Notes

Today the battle for control of the Reo Motor Car Co. between R. E. Olds and Richard H. Scott will be decided at the annual stockholders meeting. The committee supporting the former charges that the 1934 passenger car program, which just recently got under way, was late because of "Scott's attitude toward developing new models." . . . From Jan. 1 to April 7, Hudson built over 35,000 Terraplanes and Hudsons, or five times the number in the same period of last year. . . . Hupmobile is making all of the bodies for its streamlined car in its Cleveland plant. . . . The Chevrolet gray iron foundry at Saginaw is melting 1600 to 1900 tons of iron a day, supplying castings to Chevrolet and Pontiac. It has enough iron on its docks to meet requirements until at least July 1. . . . A strike at Campbell, Wyant & Cannon Foundry Co. at Muskegon lasted little more than a day. . . . Both Great Lakes Steel Corpn. and Newton Steel Co. are operating virtually at 100 per cent of capacity.

# Detroit Strike Threat Is Rapidly Evaporating

FROWNING upon further efforts to stir up strife in the automobile industry by means of strikes at this time, about 500 officers and representatives of the federal automobile union of the American Federation of Labor, meeting in Pontiac on Sunday, endorsed the Automobile Labor Board and its program to avert labor warfare.

The conciliatory action taken by the Federation is looked upon as a definite effort to discipline that portion of the membership which is inclined to seek radical means of getting what it wants. The new program is considered likely to prevent strikes breaking out in individual plants in sporadic fashion.

The new program marks a return by the Federation to the policy of peaceful penetration of the industry which was pursued for months prior to the precipitation of the general strike threat last month. It is believed that Mr. Collins personally would prefer to see more vigorous action taken, but the Federation has been maneuvered into such position at Detroit that no other plan seems feasible at the moment.

### Tool and Die Strike Makes No Headway

The tool and die strike, authorized by a vote of members of the Mechanics Educational Society last Thursday night, has not created the furore that a similar strike did last fall. The strike is directed solely against independent shops, automobile plants not being involved. Little picketing has been attempted, and the strike already appears doomed to failure. The reasons why the strikers are unable to win is that (1) they have no real grievance in wages, hours and working conditions, (2) they picked the poorest time of the year, when shops have little work on hand, and (3) general recognition by the public that the M.E.S. took strike action merely to get back into the limelight after the A. F. of L. had "stolen the show."

Newspaper reports that individual shops have signed up with the M.E.S., meeting its demands, are vigorously denied by the manufacturers. No concession whatever has been made.

The Mechanics Educational Society adopted new tactics during the current strike when it asked its members to turn in their tool kits to union headquarters, where they were sealed for the duration of the strike instead of merely taking them home. It is understood that this policy was established so that union officers might better control the rank and file of their organization.

Members of the M. E. S. voted Monday night to submit to the Automobile Labor Board cases of discrimination, at the same time reserving the right to strike when that course is deemed necessary. This is a reversal of the stand taken a week ago by Mr. Smith, who declared that the society would refuse to deal with the board because the labor member is an A. F. of L. man. The M. E. S. now has out on strike from 1500 to 3000 tool and die makers in 60 job shops in Detroit and at the Detroit Michigan Stove Co.

Notable progress has been made the past week in collective bargaining between unions and automobile manufacturers. In a formal statement Monday night the Automobile Labor Board said that lists of members of 10 unions affiliated with the American Federation of Labor had been submitted to the board for comparison and verification and that the work of checking the lists had been begun. Since these unions already have chosen their representatives to bargain for them, the board urged the companies involved to grant conferences without waiting for the results of checking. The statement further declared that "it will be understood by employers, by employees and by the board that participation in such conferences by the employer is not to be taken as recognition of any union as such, nor are the employees' representatives participating in such conferences to be taken as representing any other employees than those determined to be represented by them on the basis of the lists as dealt with by this board.

"Where the representatives of a group of employees voluntarily submit a list of names of their group to the employer it is the board's opinion that the employer should accept the list for verification, and in the meantime should confer with the representatives."

The Federated Automobile Workers of America, consisting of employees of Chevrolet and Fisher Body plants at St. Louis, was the first union to submit its membership list direct to company officials for verification. It did so voluntarily because its president said: "We have nothing to hide and we have confidence and faith in General Motors executives." This union was organized originally as a local of the A. F. of L., but broke away a few weeks ago and became an independent organization because of dissatisfaction with the A. F. of L. policy.

Dr. Leo Wolman, chairman of the Automobile Labor Board, declares that President Roosevelt has in mind the stabilizing of production and employment in the automobile industry if a practical and acceptable plan can be devised. No feasible program has yet been found. Among the suggestions considered are, first, elimination of a single automobile show period; second, graduation of car prices at different periods of the year allowing for seasonal demand; third, fewer new models and a scattering of presentations of new models throughout the year; fourth, standardization of wage scales and hours and discouragement of floating labor.

# British Iron and Steel Output Rises Sharply

LONDON, ENGLAND, April 17. (*By Cable*)—March steel ingot production in Great Britain, amounting to 829,700 tons, was 17 per cent greater than the February total of 707,500, and the highest in several years.

Pig iron output showed an even greater percentage gain, having totaled 503,600 tons, as against 414,400 tons in February, an increase of 21 per cent.

Monthly totals for 1933 and the first three months of 1934 are shown in the following table:

| 1933 | Pig Iron | Steel Ingots |
|---|---|---|
| Jan. | 286,600 | 444,400 |
| Feb. | 270,800 | 482,700 |
| March | 332,200 | 577,700 |
| April | 324,700 | 509,600 |
| May | 339,900 | 599,600 |
| June | 345,600 | 568,800 |
| July | 343,900 | 567,500 |
| Aug. | 362,700 | 551,300 |
| Sept. | 359,700 | 669,000 |
| Oct. | 373,300 | 668,300 |
| Nov. | 374,900 | 695,000 |
| Dec. | 409,300 | 668,900 |
| | 4,123,600 | 7,002,800 |
| 1934 | | |
| Jan. | 441,300 | 711,000 |
| Feb. | 414,400 | 707,500 |
| March | 503,600 | 829,700 |

Wire rope of stainless steel, which was introduced commercially by the Hazard Wire Rope Co., Wilkes-Barre, Pa., was discussed briefly by H. Macmillan, of that company, in *Nickel Steel Topics*, published by the International Nickel Co., Inc. Soft annealed 18-8 wires in sizes around 1/16 in., he says, will have roughly a yield point of 40,000 to 50,000 lb. per sq. in. and an ultimate tensile strength of 90,000 to 115,000 lb. per sq. in. When cold drawn the yield point rises rapidly with reduction in area, approaching within about 10,000 lb. of the ultimate strength. In the smaller sizes the wire can be had with a tensile strength of 250,000 to 300,000 lb. per sq. in. An outstanding field for stainless rope, he points out, is in the process industries where acids, fumes, steam and other corrosive conditions are prevalent. Use in overhead cranes under such conditions is mentioned, also in connection with a vertical heat treatment furnace.

# Growing Influx of Specifications Drives Output Up to 52 Per Cent

## Heavier Railroad Releases Are a Factor—Price Advances Filed on Pipe, Concrete Bars and Alloy Steel

WITH iron and steel makers heavily booked for the second quarter and with higher prices about to go into effect on most products, the outlook in the industry is most favorable. Some mills have such heavy commitments that they will have difficulty in turning out the tonnage if buyers specify fully against their contracts. To prevent an accumulation of releases toward the end of the quarter a number of producers are already pressing their customers for shipping instructions. Under the most popular form of contract, buyers are required to order out material in approximately equal monthly quantities.

The anxiety of the mills to obtain releases is matched by the desire of most buyers to build up maximum stocks of materials at pre-advance prices. Without doubt much of the pig iron and steel that will be made in the next three months will supply buyers' needs part way through the third quarter, barring a further acceleration of industrial activity.

THE increase in business coming from regular contract sources has been augmented by heavier releases from the railroads. Orders for car steel are growing in number and tonnage, and purchases of track material have been large. Rail contracts placed in the final week before the expiration of the code provision permitting deliveries until Aug. 31 called for a total of 75,250 tons. The New Haven closed for 25,000 tons, the Baltimore & Ohio for 35,000 tons, the Norfolk & Western for 10,000 tons, the Maine Central for 4200 tons and the Pere Marquette for 1050 tons. Total purchases since the transportation coordinator first proposed Government financial aid amount to 627,000 tons, as compared with his original estimate of 850,000 tons. Only one large prospective order remains unplaced—35,000 tons for the Chesapeake & Ohio.

STEEL ingot output has made another gain, rising from 49½ per cent to 52 per cent of capacity, the highest rate since mid-August, 1933. Operations are up four points to 54 per cent at Chicago, three points to 40 per cent at Pittsburgh, three points to 59 per cent in the Valleys, two points to 60 per cent at Cleveland, five points to 59 per cent at Buffalo, and two points to 70 per cent in the Wheeling district. The Detroit rate continues at 100 per cent, the average for the Philadelphia territory at 40 per cent and that for the South at 54 per cent.

PRICE advances are slow in taking effect. Under the code a price at a given basing point is considered effective until it is withdrawn. Since various producers have delayed following the lead of mills that first announced advances, the effective dates for the price changes have been moved ahead, in some instances until late next week. Part of the confusion growing out of the advances has been due to conflicting views of the mills. The first increases filed on wire products were nullified by a later filing of more moderate advances by a leading interest. On most products, of course, the time of filing the price changes is of little practical concern to buyers, who are given ample opportunity to contract for their needs through this quarter at previously existing prices.

The latest price advances to be announced are on pipe and billet steel reinforcing bars. Discounts on standard and line pipe have been reduced three and one-half points, or the equivalent of an advance of about $7 a ton. Oil well goods have been marked up $6 to $7 a ton. The rise in billet steel reinforcing bars is $3 a ton. Alloy steel bars have been marked up $2 a ton, instead of $1 a ton as originally announced. No move has yet been made to raise rail and track fastening prices, which, under the code provisions, are now applicable only to shipments during the current quarter.

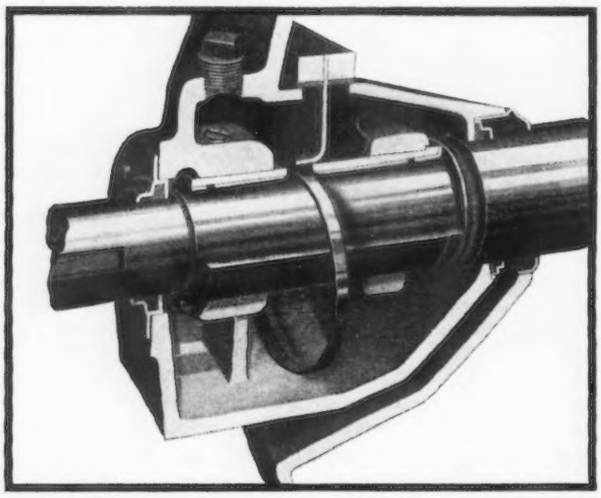
PENDING the going into effect of recent advances, THE IRON AGE composite prices for pig iron and steel remain unchanged at $16.90 a gross ton and 2.028c. a lb. respectively. The scrap composite also is unaltered at $12.58 a gross ton. A large movement of scrap, stimulated by the arrival of spring weather and the opening of Lake navigation, has offset the heavier consumption of the steel industry. Close to 100,000 tons of oil country scrap from the Southwest has recently moved to Pittsburgh and other large markets.

Structural steel awards, at 13,650 tons, compare with 12,160 tons a week ago. New projects total 12,160 tons against 13,700 tons in the previous week. Plate lettings aggregate 3650 tons, and new plate inquiries 15,465 tons.

# Only 15/10,000-INCH WEAR IN ELEVEN YEARS

## It pays to specify Westinghouse Motor Drive, through reduced maintenance and insurance against costly production delays . . .

IN April, 1923, a Westinghouse type CS Motor, equipped with Sealed Sleeve Bearings, was installed on a machine-shop boring mill.



*Sealed Sleeve Bearings defeat the causes of bearing wear. Clean oil is sealed in, dust is sealed out, and the bearing is perfectly lubricated. Wear is negligible.*

Subjected to vibration, frequent starting and stopping, and abrasive dust from iron turnings, these Sealed Sleeve Bearings *did not require a single additional drop of oil for nearly four years.* Since then, oil has been added only three times.

In February, 1934, the motor was dismantled, at our request, to take precise measurements of bearing wear. The micrometer showed wear of less than fifteen ten-thousandths of an inch. At this rate the bearing would operate at high efficiency for at least 90 more years before replacement would be necessary!

You don't buy motors to run for 90 years, but you *do* want to hold operating costs at a minimum; and this example points the way to substantial savings in bearing replacement costs, in oiling costs, and in the elimination of shutdowns.

There are many other important advantages of CS motors. For complete information, address our district office near you or simply mail the coupon.

All Westinghouse motors can be supplied with Thermoguard protection from overheating under abnormal operating conditions.

**SEND FOR INFORMATION**

Westinghouse Electric & Manufacturing Company
Room 2-N East Pittsburgh, Pa.

Gentlemen: Send complete information on Westinghouse Sealed Sleeve Bearing Motors.

*Name* .....

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*Address* .....T 79965

*City* .....*State*..... IA 4-19-34

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*Quality workmanship guarantees every Westinghouse product*

**Dust couldn't get in, Oil couldn't get out of this Sealed Sleeve Bearing**

# ▲▲▲ A Comparison of Prices ▲▲▲

## Market Prices at Date, and One Week, One Month, and One Year Previous

### Advances Over Past Week in Heavy Type, Declines in Italics

| Pig Iron | Apr. 17, 1934 | Apr. 10, 1934 | Mar. 20, 1934 | Apr. 18, 1933 |
|---|---|---|---|---|
| *Per Gross Ton:* | | | | |
| No. 2 fdy., Philadelphia | $19.26 | $19.26 | $19.26 | $14.34 |
| No. 2, Valley furnace | 17.50 | 17.50 | 17.50 | 14.50 |
| No. 2 Southern, Cin'ti | 18.13 | 18.13 | 18.13 | 13.82 |
| No. 2, Birmingham† | 13.50 | 13.50 | 13.50 | 11.00 |
| No. 2 foundry, Chicago* | 17.50 | 17.50 | 17.50 | 15.50 |
| Basic, del'd eastern Pa. | 18.76 | 18.76 | 18.76 | 14.09 |
| Basic, Valley furnace | 17.00 | 17.00 | 17.00 | 13.50 |
| Valley Bessemer, del'd P'gh | 19.76 | 19.76 | 19.76 | 16.89 |
| Malleable, Chicago* | 17.50 | 17.50 | 17.50 | 15.50 |
| Malleable, Valley | 17.50 | 17.50 | 17.50 | 14.50 |
| L. S. charcoal, Chicago | **24.04** | 23.54 | 23.54 | 23.17 |
| Ferromanganese, seab'd carlots | 85.00 | 85.00 | 85.00 | 68.00 |

†This quotation is for delivery in South; in the North prices are 38c. a ton under delivered quotations from nearest Northern furnace.

*The switching charge for delivery to foundries in the Chicago district is 60c. per ton.

| Rails, Billets, etc. | | | | |
|---|---|---|---|---|
| *Per Gross Ton:* | | | | |
| Rails, heavy, at mill | $36.37½ | $36.37½ | $36.37½ | $40.00 |
| Light rails, Pittsburgh | 32.00 | 32.00 | 32.00 | 30.00 |
| Rerolling billets, Pittsburgh | 26.00 | 26.00 | 26.00 | 26.00 |
| Sheet bars, Pittsburgh | 26.00 | 26.00 | 26.00 | 26.00 |
| Slabs, Pittsburgh | 26.00 | 26.00 | 26.00 | 26.00 |
| Forging billets, Pittsburgh | 31.00 | 31.00 | 31.00 | 31.00 |
| Wire rods, Pittsburgh | 36.00 | 36.00 | 36.00 | 35.00 |
| | Cents | Cents | Cents | Cents |
| Skelp, grvd. steel, P'gh, lb. | 1.60 | 1.60 | 1.60 | 1.60 |

| Finished Steel | | | | |
|---|---|---|---|---|
| *Per Lb.:* | Cents | Cents | Cents | Cents |
| Bars, Pittsburgh | 1.75 | 1.75 | 1.75 | 1.60 |
| Bars, Chicago | 1.80 | 1.80 | 1.80 | 1.70 |
| Bars, Cleveland | 1.80 | 1.80 | 1.80 | 1.65 |
| Bars, New York | 2.08 | 2.08 | 2.08 | 1.95 |
| Plates, Pittsburgh | 1.70 | 1.70 | 1.70 | 1.50 |
| Plates, Chicago | 1.75 | 1.75 | 1.75 | 1.70 |
| Plates, New York | 1.98 | 1.98 | 1.98 | 1.598 |
| Structural shapes, Pittsburgh | 1.70 | 1.70 | 1.70 | 1.60 |
| Structural shapes, Chicago | 1.75 | 1.75 | 1.75 | 1.70 |
| Structural shapes, New York | 1.95¼ | 1.95¼ | 1.95¼ | 1.86775 |
| Cold-finished bars, Pittsburgh | 2.10 | 2.10 | 2.10 | 1.70 |
| Hot-rolled strips, Pittsburgh | 1.75 | 1.75 | 1.75 | 1.45 |
| Cold-rolled strips, Pittsburgh | 2.40 | 2.40 | 2.40 | 1.80 |

| Finished Steel | Apr. 17, 1934 | Apr. 10, 1934 | Mar. 20, 1934 | Apr. 18, 1933 |
|---|---|---|---|---|
| *Per Lb.:* | Cents | Cents | Cents | Cents |
| Hot-rolled annealed sheets, No. 24, Pittsburgh | 2.25 | 2.25 | 2.25 | 2.00 |
| Hot-rolled annealed sheets, No. 24, Chicago dist. mill | 2.35 | 2.35 | 2.35 | 2.10 |
| Sheets, galv., No. 24, P'gh | 2.85 | 2.85 | 2.85 | 2.60 |
| Sheets, galv., No. 24, Chicago dist. mill | 2.95 | 2.95 | 2.95 | 2.70 |
| Hot-rolled sheets, No. 10, P'gh | 1.75 | 1.75 | 1.75 | 1.40 |
| Hot-rolled sheets, No. 10, Chicago dist. mill | 1.85 | 1.85 | 1.85 | 1.50 |
| Wire nails, Pittsburgh | 2.35 | 2.35 | 2.35 | 1.85 |
| Wire nails, Chicago dist. mill | 2.40 | 2.40 | 2.40 | 1.90 |
| Plain wire, Pittsburgh | 2.20 | 2.20 | 2.20 | 2.10 |
| Plain wire, Chicago dist. mill | 2.25 | 2.25 | 2.25 | 2.15 |
| Barbed wire, galv., P'gh | 2.85 | 2.85 | 2.85 | 2.35 |
| Barbed wire, galv., Chicago dist. mill | 2.90 | 2.90 | 2.90 | 2.40 |
| Tin plate, 100 lb. box, P'gh | $5.25 | $5.25 | $5.25 | $4.25 |

| Scrap | | | | |
|---|---|---|---|---|
| *Per Gross Ton:* | | | | |
| Heavy melting steel, P'gh | $14.25 | $14.25 | $14.25 | $10.25 |
| Heavy melting steel, Phila. | 11.75 | 11.75 | 11.75 | 7.00 |
| Heavy melting steel, Ch'go | 11.75 | 11.75 | 12.00 | 5.75 |
| Carwheels, Chicago | 11.75 | 11.75 | 11.75 | 8.00 |
| Carwheels, Philadelphia | 13.00 | 13.00 | 13.00 | 8.50 |
| No. 1 cast, Pittsburgh | 13.75 | 13.75 | 13.75 | 9.25 |
| No. 1 cast, Philadelphia | 13.25 | 13.25 | 13.25 | 8.00 |
| No. 1 cast, Ch'go (net ton) | 9.50 | 9.50 | 9.50 | 6.75 |
| No. 1 RR. wrot., Phila. | **12.50** | 11.00 | 11.00 | 7.50 |
| No. 1 RR. wrot., Ch'go (net) | 9.50 | 9.50 | 9.50 | 4.50 |

| Coke, Connellsville | | | | |
|---|---|---|---|---|
| *Per Net Ton at Oven:* | | | | |
| Furnace coke, prompt | $3.85 | $3.85 | $3.50 | $1.75 |
| Foundry coke, prompt | 4.60 | 4.60 | 4.25 | 2.50 |

| Metals | | | | |
|---|---|---|---|---|
| *Per Lb. to Large Buyers:* | Cents | Cents | Cents | Cents |
| Electrolytic copper, refinery | *8.25* | 8.50 | 7.75 | 5.12½ |
| Lake copper, New York | **8.50** | 8.25 | 8.00 | 5.37½ |
| Tin (Straits), New York | *55.50* | 55.80 | 54.25 | 26.12½ |
| Zinc, East St. Louis | 4.40 | 4.40 | 4.37½ | 3.15 |
| Zinc, New York | 4.75 | 4.75 | 4.72½ | 3.52 |
| Lead, St. Louis | *4.10* | 4.15 | 3.90 | 3.12½ |
| Lead, New York | 4.25 | 4.25 | 4.00 | 3.25 |
| Antimony (Asiatic), N. Y. | 7.95 | 7.95 | 7.654 | 5.60 |

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

Following established practice, THE IRON AGE this week is recognizing only those price advances which had become effective on its press date, April 17. In cases where ALL producers selling at accepted basing points had not filed new quotations 10 days prior to April 17 no change is recorded.

# ▲▲▲ The Iron Age Composite Prices ▲▲▲

| | Finished Steel | Pig Iron | Steel Scrap |
|---|---|---|---|
| April 17, 1934 | 2.028c. a Lb. | $16.90 a Gross Ton | $12.58 a Gross Ton |
| One week ago | 2.028c. | 16.90 | 12.58 |
| One month ago | 2.028c. | 16.90 | 12.67 |
| One year ago | 1.867 | 13.68 | 7.67 |
| | Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strips. These products make 85 per cent of the United States output. | Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham. | Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago. |

| | Finished Steel | | Pig Iron | | Steel Scrap | |
|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low |
| 1934 | 2.028c. April 17; | 2.028c., Jan. 2 | $16.90, April 17; | $16.90, Jan. 27 | $13.00, Mar. 13; | $11.33, Jan. 2 |
| 1933 | 2.036c., Oct. 3; | 1.867c., Apr. 18 | 16.90, Dec. 5; | 13.56, Jan. 3 | 12.25, Aug. 8; | 6.75, Jan. 3 |
| 1932 | 1.977c., Oct. 4; | 1.926c., Feb. 2 | 14.81, Jan. 5; | 13.56, Dec. 6 | 8.50, Jan. 12; | 6.42, July 5 |
| 1931 | 2.037c., Jan. 13; | 1.945c., Dec. 29 | 15.90, Jan. 6; | 14.79, Dec. 15 | 11.33, Jan. 6; | 8.50, Dec. 29 |
| 1930 | 2.273c., Jan. 7; | 2.018c., Dec. 9 | 18.21, Jan. 7; | 15.90, Dec. 16 | 15.00, Feb. 18; | 11.25, Dec. 9 |
| 1929 | 2.317c., April 2; | 2.273c., Oct. 29 | 18.71, May 14; | 18.21, Dec. 17 | 17.58, Jan. 29; | 14.08, Dec. 3 |
| 1928 | 2.286c., Dec. 11; | 2.217c., July 17 | 18.59, Nov. 27; | 17.04, July 24 | 16.50, Dec. 31; | 13.08, July 2 |
| 1927 | 2.402c., Jan. 4; | 2.212c., Nov. 1 | 19.71, Jan. 4; | 17.54, Nov. 1 | 15.25, Jan. 11; | 13.08, Nov. 22 |

# Pittsburgh Rate Up Three Points to 40 Per Cent

## Valley and Wheeling District Rates Also Higher—Pipe and Billet Steel Reinforcing Bars Are Advanced

PITTSBURGH, April 17.—With few exceptions higher prices for steel products have now been filed for second quarter. The new quotations, however, are almost entirely nominal, as most consumers covered very heavily for second quarter tonnage at the old prices. Very little spot tonnage during the current period is looked for by even the most optimistic steel sales executives. There are still many prices to be filed before all quotations will reflect uniform bases, but the principal makers have generally announced the new price schedules. Further price changes which will become effective this week or next week have been filed on pipe, wire products and concrete bars.

Standard and line, butt-weld and lap-weld pipe will be advanced three and one-half points, with clarification and some changes in extras reported for mechanical tubing and boiler tubes.

Revised quotations filed by a leading wire company for establishment on April 20 are from $1 to $3 a ton lower than those filed by a majority of wire manufacturers.

Billet steel reinforcing will be advanced $3 a ton on April 27. Carbon steel forging ingots will be marked up $3 a ton on April 19.

Large rivets will be advanced $3 a ton, and the discount on small rivets reduced to 70 and 5 per cent off list this week.

Open-hearth alloy steel bars have been boosted $2 a ton to 2.55c. at all basing points, with no changes in alloy differentials for the same specifications.

Based upon an average of maximum and minimum tonnages stipulated in second quarter contracts, steel producers are very substantially committed. Open-hearth activities continue to advance under the impetus of the heavy forward covering. Operations this week at Pittsburgh are up three points to 40 per cent. In the Valleys a similar advance brings open-hearth output up to 59 per cent, while at Wheeling operations are up two points to 70 per cent of capacity. Specifications for April shipment have not been very heavy, and finishing mill schedules are generally unchanged.

New pig iron quotations at Sharpsville, Pa., are effective today, while the advanced quotations at the Neville Island furnace will not go into effect until April 23. Scrap is very quiet and unchanged.

### Pig Iron

The Sharpsville, Pa., furnace has advanced its prices $1 a ton on foundry, basic, Bessemer and malleable, for second quarter delivery. The Pittsburgh district producer will not advance quotations until April 23. Quotations at Youngstown on Bessemer, malleable and basic will be advanced $1 a ton on April 19. In advance of the increased prices, non-integrated steel mills have covered rather moderately for basic and Bessemer. Contracting among local foundries has been relatively brisk, although aggregate tonnage has been restricted. Deliveries of steel-making grades are proceeding rapidly, while to the foundry trade the movement is not so heavy.

### Semi-Finished Steel

All producers have not yet filed advanced prices on semi-finished grades. However, a majority of makers are now quoting the following base prices at Pittsburgh: billets, blooms and slabs, $29; sheet bars, $30; forging billets, $34; wire rods, $38; skelp, 1.70c. a lb. Carbon steel forging ingots on April 19 will be advanced $3 a ton to a basis of $31, Pittsburgh, Youngstown or Chicago. Shipments to non-integrated mills are increasing, and are likely to continue the gain for some weeks.

### Bolts, Nuts and Rivets

By the end of the current week large rivets will be advanced to $3, base, per 100 lb., Pittsburgh or Cleveland; $3.10 Chicago, and $3.15 Birmingham. The discount on small rivets will be revised to 70 and 5 per cent off list at Pittsburgh, Cleveland, Chicago and Birmingham. The new prices will apply only to buyers not under contract for second quarter. Most regular consumers are already committed for their requirements in the current quarter, and manufacturers will therefore not benefit particularly from the advances until third quarter contracting begins.

### Rails and Track Accessories

The Baltimore & Ohio has placed orders for 35,000 tons of rails, of which 15,000 tons was awarded to Carnegie Steel Co., 10,000 tons to Bethlehem Steel Co., 7000 tons to Illinois Steel Co., and 3000 tons to Inland Steel Co. The same road distributed widely orders for 12,000 to 15,000 tons of companion fastenings. The Norfolk & Western has contracted for 10,000 tons of rails, awarding 7500 tons to Carnegie Steel Co. and 2500 tons to Bethlehem Steel Co. General specifications for track equipment are increasing. The improvement is likely sponsored by prospective price advances on tie plates and spikes that now seem practically assured within a week or so. Effective April 16, all quotations on steel rails and track equipment must revert to provisions of the steel code, and are thus applicable only to shipment during second quarter. Prior to April 15 prices applied to shipment until Aug. 31. Light rails, rolled from billets, have been advanced $3 to $35 a gross ton, Pittsburgh.

### Bars

Practically all producers are now quoting the advanced price on soft steel bars of 1.90c., Pittsburgh, for second quarter delivery. Several producers, however, have not yet effected the $3 a ton increase, but they will probably do so by the end of the current week. Specifications are considered very satisfactory, and shipments to consuming quarters are well distributed.

Billet steel reinforcing will be advanced $3 a ton on April 27. Cut lengths, as quoted by distributors, will then be established at 2.05c. a lb., Pittsburgh, and 2.10c. at all other basing points, excepting the Gulf ports, which will be 2.35c., and Pacific Coast ports, which will be 2.50c. All quotations outstanding on specified projects will be protected for 60 days beyond the date of filing of the new prices.

### Cold-Finished Steel Bars

Specifications have improved. Takings by the motor car manufacturers are more frequent, and demand from manufacturers of household equipment is particularly encouraging. Other consuming groups are likewise adding impetus to activity. Jobbers continue to be a notable exception.

### Plates and Shapes

The principal producers are now quoting tank plates and structural shapes on the new basis of 1.85c., Pittsburgh, for second quarter delivery. All new projects are thus

subject to the advanced quotation. Quotations submitted prior to the advance, on identified projects, are being protected for 60 days beyond the filing date for the new prices. In anticipation of the advances, many new construction plans were rushed to estimators, but this work was generally bare of important tonnage. Small-lot structural jobs, some of which originated from private sources, were more numerous. A few anticipatory lots of plates were placed at the old quotation, but the amount of forward buying was naturally restricted because of the usual necessity for producing plates to specification.

### Wire Products

Prices have been filed by a large mill as follows: wire nails $2.60 a 100 lb., Pittsburgh; manufacturers' wire, 2.40c. a lb.; barbed wire $3 a 100 lb. The mill also filed an advance of $5 a ton on bale ties. These advances are from $1 to $3 a ton below the advances on wire products filed by most other producers, and will become effective April 20, whereas previously advanced quotations were established on April 12. Second quarter contracting for nails was particularly heavy prior to the advance. An improvement in demand for wire mesh for road work is also a welcome adjunct to current mill business.

### Sheets

With the advanced prices generally effective yesterday, the speculative buying rush is over. The new bases at Pittsburgh for second quarter are as follows: hot-rolled annealed, No. 24, 2.65c.; galvanized, No. 24, 3.25c.; hot-rolled, No. 10, 2c.; heavy cold-rolled, No. 10, 2.70c.; light cold-rolled, No. 20, 3.15c.; vitreous enameling stock, No. 20, 3.20c.; long ternes, No. 24 unassorted, 8-lb. coating, 3.65c. Most mills are heavily committed at the old prices, and if consumers order out maximum tonnages specified in contracts, producing departments will be taxed to the limit during the second quarter. Specifications for April, however, have not spurted particularly, and sheet mill operations have consequently fallen back as a result of lower releases last week during labor unsettlement in the automotive industry. Operations during the current week will probably average not better than 50 to 55 per cent of capacity.

### Tin Plate

Specifications have improved. The leading producer continues to operate at about 80 per cent of capacity, with some independent mills fully engaged. The average for the group is estimated at around 80 per cent. Tin mill black plate, No. 28 gage, is now quotable at 2.85c., Pittsburgh, for second quarter delivery. Heavy bookings of tin mill black plate prior to the advance are reported.

### Strip Steel

Practically all producers are now quoting 2c. for hot-rolled strip and 2.80c. for cold-rolled strip, at Pittsburgh, for second quarter delivery. Most mills are heavily booked with second quarter tonnage at the old prices, and operations are pointed toward an increase.

### Coal and Coke

The tentative advance of 25c. a ton on bituminous coal has been definitely established by most operators. New bituminous coal price lists, however, have not been distributed thus far. Demand for soft coal is negligible, although possibility of labor difficulties in West Virginia producing fields may swing over some business to western Pennsylvania mines, unless the problems are solved shortly.

### Scrap

Scrap trading is restricted almost entirely to broker covering on orders, and prices are nominally unchanged. On No. 1 steel orders, brokers are able to cover freely at $14, and small yard dealers, excepting in uncommon cases, will not release tonnage at less than that figure. Despite a further improvement in open-hearth operations in this district, the trend in the scrap market is not clearly definable. The recent buying movement, which involved a fairly substantial aggregate tonnage of scrap, has failed to create an expected firm position. A possible softening influence has been the movement of scrap during the past 90 days from Arkansas, Texas, Louisiana and Oklahoma, where an accumulation of approximately 100,000 tons of oil country scrap had been stored. Establishment of a rate of 31c. per 100 lb. to the Pittsburgh district has enabled brokers to move a large part of this tonnage at a profit. This movement undoubtedly has partly offset potential strength growing out of heavy export shipments from Eastern ports. With most of the Southern scrap already moved into consumption, and with open-hearth output pointed upward, scrap prices would likely prove sensitive to a moderate resumption of consumer buying.

## Contracting Heavy At St. Louis

ST. LOUIS, April 17.—Anticipating an advance of $1 a ton in the price of pig iron, there was a rush of melters to cover their requirements for the second quarter of the year during the last week. This applied to both Northern and Southern makes and to all grades except basic, which still lags in comparison with other grades. Some of the business placed is believed to be of a speculative nature.

The finished steel trade has been marked by an unusually heavy amount of contracting for all items to anticipate price advances. A most encouraging feature of the contracting was the fixing of higher minimum requirements than previously. The greatest interest is said to be in sheets of all kinds, and some fear has been expressed that contracts exceed the capacity of the mills. Silas Mason of New York and the Walsh Construction Co., Davenport, Iowa, are jointly low bidders on the general contract for the dam at Fort Peck, Mont., a Federal project, requiring 8000 tons of structural steel. The American Bridge Co. is low bidder on a building for the St. Louis Terminals Co., requiring 150 tons of structural steel.

The scrap market is fairly steady, and apparently there is sufficient short interest on the part of dealers to keep it so. Several items are from 25c. to 50c. a ton lower, although bundled sheets are 75c. a ton up. There has been no buying by mills. Railroad lists include: Chicago, Milwaukee, St. Paul & Pacific, 142 carloads; Nashville, Chattanooga & St. Louis, 70 carloads; Chicago & Eastern Illinois, 15 carloads, and Missouri Pacific, 71 carloads, the latter being the only material taken in this market.

## Steel Output Up At Buffalo

BUFFALO, April 17.—Fifteen open-hearths are now in operation at Bethlehem's Lackawanna plant, an increase of two; Wickwire-Spencer Corpn. has increased to two open-hearths and the Seneca sheet division of Bethlehem is operating at 90 per cent. Republic Steel Corpn. continues to operate four furnaces, including one 200-ton unit.

Buyers of pig iron have covered moderately for their requirements pending the increase in prices, which is now scheduled to go into effect April 19 instead of April 16 as originally reported. Most of the makers have accumulated a fair volume of tonnage, but not as much as they might if credit were easier. Operations have been reduced with the taking out of the Tonawanda Iron Co.'s stack.

The scrap market has weakened generally. The largest consumer has dropped its offering price on No. 1 heavy melting steel to $12 and on No. 2 heavy melting steel to $10.50; smaller dealers are flooding the larger dealers with material and the first boat of the season has made port from Detroit. All these factors combine to soften the market in the face of expanding open-hearth operations. Sales of No. 1 and No. 2 were made during the week at $12.50 and $11. A sale of 1000 tons of No. 1 machinery cast is reported at $13.

# Chicago Operations Rise Four Points to 54 Per Cent

**Railroad Buying Is Reinforced by Releases from Farm Equipment Makers—Foreign Fencing a Disturbing Factor**

CHICAGO, April 17.—Ingot output has gained four points to 54 per cent of capacity. Rails are moving at a faster rate and road and bridge building steel is in greater demand. Also, farm machinery builders have been able to step up output moderately and some shipments are being made against recent railroad car purchases.

The buying rush that came with the increase in wages and the filing of higher prices is near an end. How far speculation may have figured in this covering movement cannot be ascertained at this time, but it is significant that some second quarter contracts have been increased twice, with the purpose in mind of having materials in stock for the first part of the third quarter.

Considerable confusion is resulting from indefinite knowledge of the effective dates of the higher prices, and some additional confusion arises from the fact that not all prices filed on some commodities have been uniform.

Labor troubles are still an important factor in many industrial districts. The Kenosha and Racine works of the Nash company have voted to return to work, but employees at the Seaman body works have voted against the proposed settlement of the strike and all plants remain idle.

Fence makers find a disturbing factor in climbing mail order business, based largely on foreign made fencing, while their own orders for this product lag far behind seasonal expectations.

### Pig Iron

Forward buying is rapidly coming to an end, though here and there a user is increasing the tonnage first contracted for. Some melters intend to carry in stock some of their current purchases for use in the third quarter. Shipments of Northern iron are running fully 30 per cent ahead of the March rate. Prices for Northern iron range from $17.50 to $18.50. However, the last price advance to be filed will be effective on April 20, on which date all quotations will be uniform at $18.50. A charcoal furnace has been brought into blast.

### Reinforcing Bars

Awards of about 1500 tons consist wholly of State highway and bridge work and municipal projects undertaken with the aid of Federal funds. Bids opened on 3800 tons at Fort Peck, Mont., disclosed that a combination of two contractors entered the low figures. New prices on reinforcing bars are on the verge of being filed. Speculation is rife as to the amount of the advances, with most opinions leaning toward $3 a ton. Fresh inquiries are extremely light.

### Cast Iron Pipe

Private business is almost wholly lacking and public works programs are a distinct disappointment to sellers. Foundry schedules so far this spring have been on a fair basis, but books are growing lighter. Much of the tonnage now being shipped represents old orders released in late winter and some new business taken in January and February.

### Rails and Track Supplies

Distribution of the Great Northern rails was 5000 tons to Bethlehem, 5000 tons to Inland and 10,000 tons to Illinois. These companies also received the tie plate requirements, which totaled 4000 tons. Other accessories were taken by miscellaneous producers. The Baltimore & Ohio has placed 15,000 tons with Carnegie, 10,000 tons with Bethlehem, 7000 tons with Illinois and 3000 tons with Inland. Carnegie received 7500 tons from the Norfolk & Western and Bethlehem received 2500 tons.

Light rails, both billet quality and those rolled from old rails, are being marked up $3 a ton. Standard-section rail prices are in doubt, the extension of the old price having expired April 15. Chicago mills have increased schedules moderately.

### Cold-Rolled Strip

Second quarter books are heavy and specifications assure satisfactory operations for weeks to come. New prices filed call for advances of $8 a ton.

### Wire Products

The unusual situation of non-uniformity of prices filed has arisen in this market. Advances on nails, staples and fencing are uniform, but wire advances are $3 a ton in some cases and $2 in others. Contracting for second quarter has been very heavy and specifications are much improved and point to an increase of operations, which now stand at 45 per cent of capacity. The bulk of business is coming from manufacturers. Dealers are reducing stocks but are not replenishing. In the meantime mail order houses, well supplied with foreign made fencing, report increasing sales to the discomfiture of American mills which still find rural areas comparatively inactive.

### Rivets

Discounts on small rivets are being changed to 70 and 5 per cent off list and quotations on large rivets are being raised to $3.10 per 100 lb., Chicago.

### Structural Material

This market is quiet except for announcements of low bidders on several important jobs. Bids will be opened today on three grade separation projects in Illinois, requiring in all 900 tons. Awards are unusually light at about 1500 tons, and fresh inquiries, not including gas holders, not only are small but most of them are for State highway bridges. Prices now on file for structural shapes are 1.90c. a lb., Chicago, an advance of $3 a ton.

### Plates

Fresh inquiries for gas holders total 13,500 tons and a round tonnage of plates will be used at Milwaukee for a bulk oil storage station. A few small specifications for materials for the Van Sweringen line cars are now reaching mills. The Milwaukee road is considering building 50 passenger cars in its own shops.

### Bars

The bar market continues to gain momentum, especially in reinforcing work, now that road programs are again under active construction. Farm implement manufacturers are again taking more steel and automobile builders have lost no ground. The Nash plants are still tied up by strikes.

### Scrap

This market seems groggy after the activity of recent weeks, and if there is a real trend it is toward softness in prices for the steel mill grades. Railroads are selling freely and scrap comes on track with little delay. Supplies of most grades are ample and there is no difficulty in covering old contracts. Acceptances by mills are in good volume and mill stock piles are growing, not alone because of incoming shipments but because mills are making more of their own scrap. A boatload of No. 2 busheling will leave a Chicago dock May 15 for Cleveland. Other grades on dock are moving into the local market.

# Pipe and Concrete Bars Advanced at New York

**Alloy Steel Also Marked Up — New Haven and Baltimore & Ohio Close for Their Rail and Accessory Requirements**

NEW YORK, April 17. — Additional advances have been announced to round out the price changes which have been made within the past fortnight. On Saturday one mill filed advances of three and one-half points on base on standard and line pipe and of $6 to $7 a ton on oil well goods, effective April 24. Similarly an advance of $3 a ton on concrete reinforcing bars was filed. Several mills have filed advances of $2 a ton on alloy steel bars and billets, effective April 18.

The one complicating factor in connection with these filings is that until all producers have filed an advance it really does not take effect so far as the industry as a whole is concerned. On a considerable number of products first quarter prices have not been entirely withdrawn and, therefore, are technically still in force. In the case of wire products, a later filing differed from the original filings with the result that the final advances are not so great as those first announced. Plain wire, for example, has been marked up only $2 a ton instead of $3, barbed wire is up $3 instead of $5, bale ties are up $5 instead of $6, and spring wire has not been advanced at all.

The expiration of the rail price drove in two large purchases, the Baltimore & Ohio having closed for 35,000 tons and the New Haven for 25,000 tons of rails. These roads also bought accessories.

Contracting has been very heavy and the mills now fear that they have booked a great deal of speculative tonnage. To prevent a concentration of specifications at the end of the quarter, a number of mills have already sent out cautionary letters to their customers.

### Pig Iron

Most large consumers contracted for their second quarter requirements early in April, and, consequently, bookings for the seven-day period were much lower at 8100 tons, as compared with 17,000 tons booked last week and 5100 tons a fortnight ago. A $1 a ton advance in eastern Pennsylvania is already in effect, and Mystic iron will be $1 higher on April 23. In addition, low phosphorous producers at Standish, N. Y., Steelton and Birdsboro, Pa., have increased their base price 50c. to $23.50 a ton, effective the latter part of this week. Actual business in this territory has improved but little, and the heavy purchases made recently merely represent a policy of increasing stocks in order to evade higher prices. It is doubtful whether the aggregate second quarter melt will be sufficient to consume the iron now under contract; therefore it is probable that market activity will be quite dull for the next few months. The A. P. Smith Mfg. Co., Bloomfield, N. J., has placed a nominal 300-ton inquiry in the market, but sellers cannot bid for the business until June 1.

### Reinforcing Steel

One producer filed a $3 a ton price advance on billet steel reinforcing bars Saturday, but current quotations will remain unchanged for 10 days after the last price filing is made. There is a moderately heavy small-tonnage demand in this district, and potential business consists of occasional highway awards in Pennsylvania, New Jersey and Massachusetts. A diversity of projects accounted for aggregate awards of about 1500 tons last week, distributed almost equally among Kalman Steel Corpn., Truscon Steel Co. and Joseph T. Ryerson & Sons, Inc.

### Scrap

Very little business is being transacted in adjacent selling districts; consequently brokers' prices for domestic deliveries are somewhat uncertain. However, this market continues to be ruled by export activity, and purchasing quotations f.o.b. barge for all important grades are firm and unchanged from last week. Brokers are steadily accumulating shipments against existing contracts for delivery to Japan, Poland and Italy, and a substantial volume of new business was placed last week. England is taking sizable tonnages of heavy melting steel, and Spain is tentatively in the market for a quantity of steel mill and foundry scrap.

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# Advance in Cast Pipe Prices Expected in South

BIRMINGHAM, April 17. — There have been substantial bookings of pig iron and steel products since the announcement on April 6 of higher prices. Local producers now have a satisfactory volume of forward tonnage for the second quarter.

### Pig Iron

Most foundries have covered their second quarter needs at the old price of $13.50 during the past ten days. Furnaces have been accepting all pending contracts at the old figure and there was a rush to take these up after notice of the $1 advance. New inquiries are now being received with the base at $14.50, which is now in effect for spot business. There has been little of such business, however, and not much is expected for some time.

Furnace operations remain at 10, with four on basic iron, five on foundry and one on recarburizing.

### Pipe

Current business is about the same as in March and the expected April pickup has not yet developed. A contractor job at Seattle, involving about 600 tons, was awarded on April 10 but the pipe has not yet been placed. Another contractor job at Lincoln, Neb., on April 10, resulted in an award of about 250 tons to United States Pipe & Foundry Co. National Cast Iron Pipe Co. booked about 110 tons from Beaumont, Tex., on April 10.

Consideration is being given to an advance in pipe prices, but this step has not yet been taken.

### Steel

There has been a generous booking of steel products for the second quarter, particularly in sheets and wire products. Bars, plates and shapes will go up $3 a ton; sheets, $5 to $8; barbed wire, $3; fence, $3; nails, $5, and plain wire, $2.

Railroad buying is about over for the time being and only a few scattering lots remain to be placed.

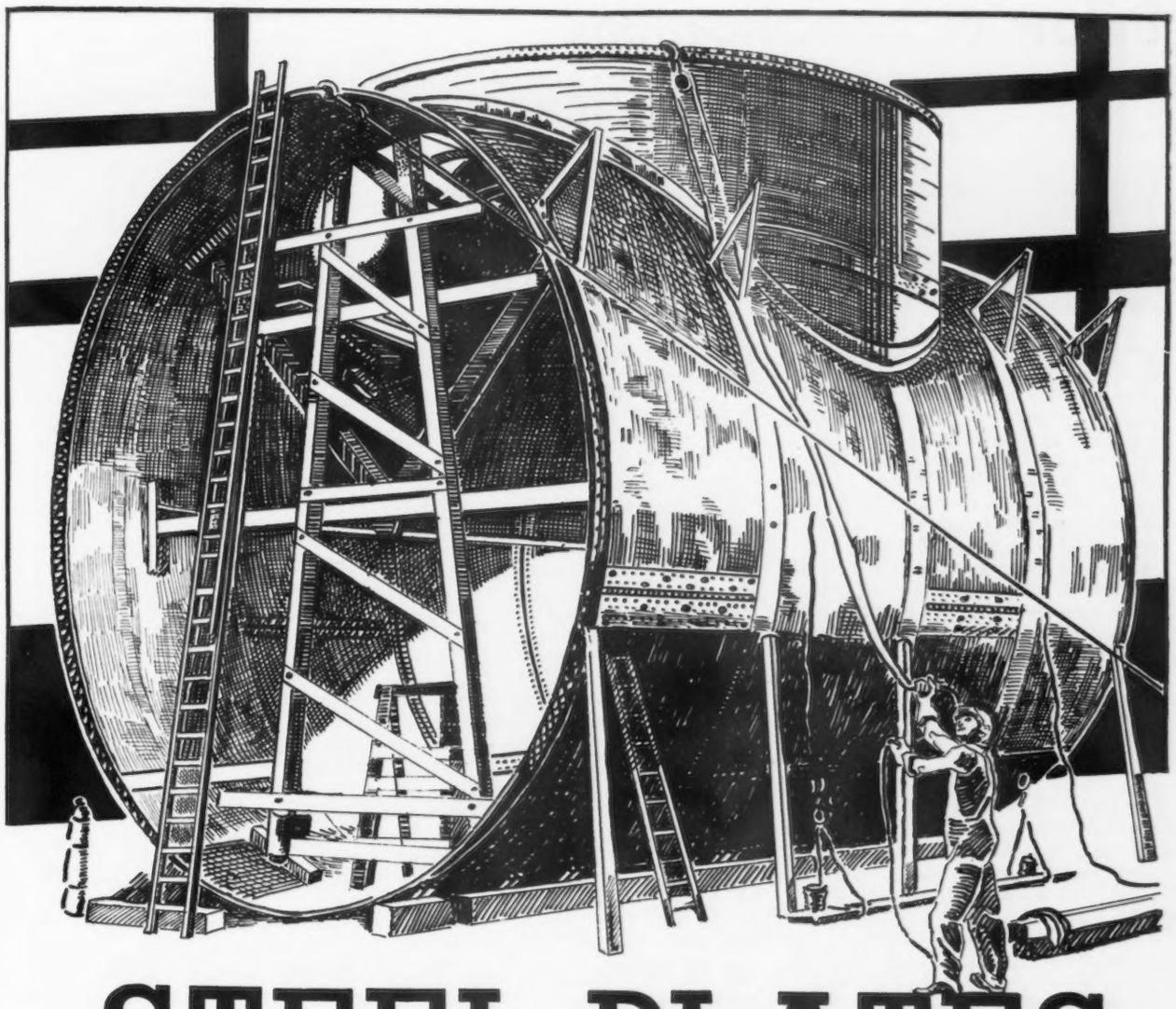
A number of projects involving structural steel are in prospect for the near future.

Local producers are hopeful that some of the car business now pending will be placed in this district.

Thirteen open-hearths operated last week, the same number as for several weeks past.

### Scrap

The market is still listless and without price changes. Steel grades are especially slow. A small demand is continuing for cast grades.



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# Inflow of Specifications Heavy at Cleveland

## Ingot Output for District Is Pushed Up Two Points to 60 Per Cent—Chesapeake & Ohio to Buy 35,000 Tons of Rails

CLEVELAND, April 17.—Specifications in heavy volume poured into the mills last week and a large tonnage came from the railroads in track material. The inflow of contracts at the old prices continued until the deadline date, which was April 16, on most products. Practically all consumers have covered with contracts, although in a few cases certain commitments have been overlooked and consumers this week tried unsuccessfully to cover at the old prices. Heavy purchases were made by the automotive industry, some of the plants in this field covering for the same tonnage that they placed in the first quarter. If all the steel contracted for is taken out, some of the sheet and strip mills have all the tonnage on their books that they can produce through the remainder of the quarter.

Ingot output in the Cleveland-Lorain district again increased two points this week, the addition of another Cleveland furnace bringing the output up to 60 per cent of capacity.

Heavy purchases of track accessories were made by the Van Sweringen railroads and one of these, the Chesapeake & Ohio, is expected to come in the market shortly for 35,000 tons of rails. Latest additions to the list of products advanced are steel pipe and new billet steel reinforcing bars.

The Ford Motor Co. is about to place 50,000 tons of ore which it recently inquired for and this probably will start the ore buying season this week. As leading producers quoted last season's prices on the Ford inquiry, there is no expectation of price changes.

### Pig Iron

The market continued quite active the past week. Many consumers not already covered placed contracts for the remainder of the quarter. Buying, however, was not so heavy as during part of March. Consumers appear to have purchased conservatively for their expected requirements. General Motors Corpn., which some thought might come into the market to take advantage of the prevailing price, although it still has a large stock of iron, is understood to have made no purchase. Activity ceased today when the $1 a ton advance became effective. Shipments this month are running about 30 per cent ahead of March.

### Iron Ore

Consumption of Lake Superior ore during March amounted to 2,189,566 tons as compared with 1,727,746 tons in February. The amount used during March, 1933, was 593,024 tons. Furnace stocks April 1, were 24,059,567 tons and the amount on docks and furnace yards on that date was 29,041,103 tons as against 29,556,975 tons on the same date last year. There were 85 furnaces in blast using Lake ore March 31, as compared with 76 on the last day of February.

### Bolts and Nuts

Makers state that they expect to adhere to present prices through the current quarter but that increased costs will necessitate an advance for the third quarter. Demand continues heavy from the automotive industry, and orders from railroads and miscellaneous sources show improvement. The industry is operating at about 50 per cent of capacity. Cap and set screws are being quoted through the quarter without change in the recent price.

### Sheets

A heavy volume of business in contracts was placed before the advance in prices became effective April 16, and practically all consumers are now under contract. Specifications have been coming out freely. One leading producer adhered to a clause in its contracts that all specifications for May shipment be sent in by April 15.

### Bars, Plates and Shapes

A Cleveland mill has filed a $3 a ton advance on new billet steel reinforcing bars, effective April 24, making 2.05c. the distributer's price for cut lengths. A similar advance is expected on rail steel reinforcing bars, although a new price on these has not been announced. Alloy steel bars have advanced $2 a ton to 2.55c. base, effective April 18. The Wheeling & Lake Erie has purchased 1000 tons of plates and shapes for car repair work. Fabricators took 60 days' option on material for a few small structural jobs at the old 1.70c. price. New inquiry includes 300 tons for a Nickel Plate railroad bridge and 250 tons for a building for the Grasselli Chemical Co.

### Pipe

A price advance of three and one-half points or $7.50 per ton has been made on steel pipe, effective April 24. New prices have not yet been announced on oil country tubing and casing.

### Strip Steel

The price advance, effective April 16, brought out a heavy tonnage in contracts for the remainder of the quarter, and mills are now interested mainly in getting early specifications. Some producers would find themselves oversold if buyers should take out the maximum amount of their contracts. General Motors accessory units have covered for the same tonnage as for the first quarter.

### Scrap

New consumer demand is lacking and several mills in the Cleveland and Valley districts are restricting shipments, although consumption has not been reduced. The supply is abundant, and without restrictions scrap would be reaching some of the mills faster than it is being consumed. Two cargos of blast furnace scrap have reached a Cleveland plant since the opening of navigation.

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# New England Foundry Coke Advanced

BOSTON, April 17.—Almost every New England consumer having cash or credit has bought pig iron to forestall the advance in price that takes place April 20. As a result, sales run well into six figures, and are the largest for any similar period in more than a year. Buying in some instances was prompted by increased foundry operations, the production shops being especially active. On the other hand, tonnage purchased will carry certain foundries well through the second quarter.

The scrap market is fairly active, with prices, except in the case of T-rails and bundled skeleton, firm and unchanged. The exceptions are about 25c. a ton higher. Most of the buying centers in No. 1 and No. 2 steel, breakable cast, steel turnings, skeleton and shafting, and is for Pennsylvania delivery.

By-product foundry coke has been advanced 50c. a ton, effective April 16, by New England ovens.

Competition among pipe foundries is keen. Brookline, Mass., has closed with the Donaldson Iron Co. on 325 tons of pipe and castings at $44.80 a ton. R. D. Wood & Co. bid $45.50 a ton for the pipe, and the United States Pipe & Foundry Co. $45.60.

# Eastern Pennsylvania Buyers Cover for Second Quarter

**Complete Contracting Prior to Price Advances—Mills Urge Early Specifying — Sheet Operations at Capacity**

PHILADELPHIA, April 17.—With increased prices of iron and steel about to go into effect contract coverage by consumers virtually has been completed. To take advantage of old levels it is necessary that shipments be made by June 30. In order to prevent a congestion at the close of the second quarter, mills are urging buyers to specify at their earliest convenience. Contracting for sheets and strips has been especially heavy and mills are already at or near to capacity. On plates, shapes and bars a less active condition prevails, though there has been a fair stimulus in these lines also.

The market has taken on a more cheerful tone as the result of the second-quarter contracting, and a good operating rate is assured for this period. It is likely that production will be stepped up soon in this district, though for the present it remains unchanged at 40 per cent of ingot capacity.

### Pig Iron

Price advances about to go into effect have brought in fair-sized second-quarter contracts at old prices. Lots placed range generally from 100 to 500 tons, covering foundry and basic grades chiefly. There is still a lag in buying on the part of jobbing foundries, however. All price advances are $1 a ton, except for low phosphorus iron, which moves up 50c. to $23.50 at Birdsboro and Steelton, Pa. The new furnace price on No. 2 foundry is $19.50; on basic, $19; on malleable, $19, and on Bessemer, $20.50. Prices of Indian iron are to be advanced $1 also.

### Plates, Shapes and Bars

Railroads and fabricators have made some fair-sized contracts for these three lines, while miscellaneous buyers also have made good-sized coverages on second-quarter contracts. As in other lines there has been some confusion over the varying filing dates of increased prices, about to go into effect. Under the new schedules levels move up $3 per ton, with steel bars 1.90c., Pittsburgh; plates, 1.95c.; Coatesville, and shapes, 1.95c., Bethlehem. The respective Philadelphia delivered prices will be 2.19c., 2.035c. and 2.055c.

The Phoenix Bridge Co. has taken 1750 tons for a bridge over the Allegheny River on State Route No. 750 and the Kalman Steel Corpn. was awarded 475 tons of sheet piling by the Navy department for Bolling field in Washington. The McClintic-Marshall Corpn. was awarded 850 tons for a bridge at Anacostia, D. C., for the Pennsylvania Railroad. The Pennsylvania Railroad has also placed some fair-sized contracts for merchant steel bars. Deliveries on heavy rolled products are being made in two weeks or less time generally, but probably will be extended in view of the increased contracting.

Most of the steel for the Camden, N. J., section of the high-speed approach to the Philadelphia-Camden bridge has been awarded. The fabrication of the structural steel, amounting to 2400 tons, has been placed with the American Bridge Co. Carnegie Steel Co. has been awarded 1700 tons of sheet steel piling and 500 tons of plain beams. National Tube Co. has the contract for 220-tons of pipe. The concrete bars required, amounting to 1300 tons, have not yet been awarded.

### Sheets

Automotive contracting for sheets and strip steel for the second quarter has been especially heavy and mills are filled practically to capacity. There also has been increased business placed by stove makers, and greater orders are expected now that model changes are about completed and production is soon to be begun. Radio makers likewise are more active in the market. Some mills report that automotive tonnage placed for the second quarter is the largest in four years, exceeding that placed last October just prior to price advances. Consumers are being urged to specify in time to permit completion of shipments by June 30, after which the higher levels will apply. Hot-rolled strip has been advanced $5 a ton to 2c., Pittsburgh or 2.29c., Philadelphia. Hot-rolled No. 10 and heavy cold-rolled No. 10 sheets will be advanced $5 a ton to 2c. and 2.55c., Pittsburgh respectively, making the Philadelphia delivered prices 2.29c. and 2.84c. respectively. On other grades the advance is $8 a ton, Pittsburgh base prices being 2.65c. on hot-rolled annealed No. 24; 3.15c. on light cold-rolled No. 20 and 3.25c. on galvanized No. 24. The respective Philadelphia prices will be 2.94c., 3.44c. and 3.54c. Deliveries on full-finished and galvanized sheets now range from three to four weeks.

### Warehouse Business

Increased prices are expected to be announced soon by jobbers. Meanwhile the market remains steady, with a mild improvement in demand for factory fence wire.

### Scrap

Except for an increase of $1.50 in No. 1 railroad wrought to $12.50, scrap prices remain unchanged. The market is dull, but is more sensitive in view of the increased prices announced for pig iron and steel. Mills generally still have fair-sized supplies of old material on hand, but since they probably will step up output soon, scrap dealers think they will be in the market shortly for scrap. Such a development might see an upsing in prices. This trend is also seen because of the increased export movement. Several cargoes of scrap will be shipped this month to foreign markets.

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# Pig Iron and Steel Active in Cincinnati

CINCINNATI, April 17.—Although foundry operations are low, pig iron buying is at better than average levels. This is largely due to the fact that the effective dates of recent price increases were advanced, permitting consumers another week to cover at old quotations. Bookings for the week were about 2500 tons, placed in 250, 200 and 100-ton lots. Some melters purchased carlots for spot shipment, but the bulk of business is for stock. Southern iron has been more active, furnace representatives closing for about 700 tons in 100-ton and carload lots.

### Coke

The usual seasonal reduction in domestic coke is in effect. Dealers prices on by-product coke for domestic use are set at $5.25, delivered in Cincinnati, a reduction of 50c. Foundry coke shipments are regular, although Southern ovens are withholding quotations for new business.

### Steel

Renewed heavy ordering from varied sheet consumers has raised the demand index in this area to 90 per cent of mill capacity. Fear of further price advances has brought a number of consumers into the market on contracts for the remainder of the quarter. The leading district interest reports that the combined contracts and current specifications will require capacity operations in many departments, bringing its average to about 65 per cent over all.

# Prices of Finished and Semi-Finished Steel, Coke, Coal, Cast Iron Pipe

Following established practice, THE IRON AGE this week is recognizing only those price advances which had become effective on its press date, April 17. In cases where ALL producers selling at accepted basing points had not filed new quotations 10 days prior to April 17 no change is recorded.

## BARS, PLATES, SHAPES

### Iron and Steel Bars

| | Soft Steel | Base per Lb. |
|---|---|---|
| F.o.b. Pittsburgh mill | | 1.75c. |
| F.o.b. Chicago or Gary | | 1.80c. |
| Del'd Philadelphia | | 2.04c. |
| Del'd New York | | 2.08c. |
| F.o.b. Cleveland | | 1.80c. |
| Del'd Detroit | | 1.90c. |
| F.o.b. Buffalo | | 1.85c. |
| F.o.b. Birmingham | | 1.90c. |
| F.o.b. cars dock Pacific ports | | 2.30c. |
| F.o.b. cars Gulf ports | | 2.15c. |
| | *Rail Steel* | |
| | (For merchant trade) | |
| F.o.b. Cleveland | | 1.85c. |
| F.o.b. Chicago | | 1.70c. |
| F.o.b. Gary | | 1.85c. |
| F.o.b. Pittsburgh | | 1.65c. |
| F.o.b. Buffalo | | 1.90c. |
| F.o.b. Birmingham | | 1.80c. |
| | *Billet Steel Reinforcing* | |
| | (Cut lengths as quoted by distributers) | |
| F.o.b. P'gh mills | | 1.90c |
| F.o.b. Birmingham | | 1.95c. |
| F.o.b. Buffalo | | 1.95c. |
| F.o.b. Cleveland | | 1.95c. |
| Del'd Detroit | | 2.05c. |
| F.o.b. Youngstown | | 1.95c. |
| F.o.b. car dock Pacific ports | | 2.35c. |
| F.o.b. cars dock Gulf ports | | 2.30c. |
| F.o.b. Chicago | | 1.95c. |
| | *Rail Steel Reinforcing* | |
| | (Cut lengths as quoted by distributers) | |
| F.o.b. Pittsburgh | | 1.75c. |
| F.o.b. Cleveland | | 1.80c. |
| F.o.b. Chicago | | 1.80c. |
| | *Iron* | |
| Common iron, f.o.b. Terre Haute, Ind. | | 1.60c. to 1.75c. |
| Refined iron, f.o.b. P'gh mills | | 2.75c. |
| Common iron, del'd Philadelphia | | 1.89c. |
| Common iron del'd New York | | 1.93c. |

### Steel Car Axles

| | |
|---|---|
| F.o.b. Pittsburgh | 2.50c. |
| F.o.b. Chicago | 2.50c. |

### Tank Plates

| | Base per Lb. |
|---|---|
| F.o.b. Pittsburgh mill | 1.70c. |
| F.o.b. Chicago | 1.75c. |
| F.o.b. Gary | 1.75c. |
| F.o.b. Birmingham | 1.85c. |
| Del'd Cleveland | 1.885c. |
| Del'd Philadelphia | 1.885c. |
| F.o.b. Coatesville | 1.80c. |
| F.o.b. Sparrows Point | 1.95c. |
| Del'd New York | 1.98c. |
| F.o.b. dock cars Pacific ports | 2.25c. |
| F.o.b. cars dock, Gulf ports | 2.10c. |
| Wrought iron plates, f.o.b. P'gh | 3.00c. |

### Floor Plates

| | |
|---|---|
| F.o.b. Pittsburgh | 3.35c. |
| F.o.b. Chicago | 3.25c. |

### Structural Shapes

| | Base per Lb. |
|---|---|
| F.o.b. Pittsburgh mill | 1.70c. |
| F.o.b. Chicago | 1.75c. |
| F.o.b. Birmingham | 1.85c. |
| F.o.b. Buffalo | 1.95c. |
| F.o.b. Bethlehem | 1.80c. |
| Del'd Cleveland | 1.885c. |
| Del'd Philadelphia | 1.905c. |
| Del'd New York | 1.9525c. |
| F.o.b. cars dock, Gulf ports | 2.10c. |
| F.o.b. dock cars Pacific ports (standard) | 2.25c. |
| F.o.b. dock cars Pacific ports (wide flange) | 2.35c. |

### Steel Sheet Piling

| | Base per Lb. |
|---|---|
| F.o.b. Pittsburgh | 2.15c. |
| F.o.b. Chicago mill | 2.25c. |
| F.o.b. Buffalo | 2.25c. |
| F.o.b. cars dock Gulf ports | 2.60c. |
| F.o.b. cars dock Pacific ports | 2.60c. |

### Alloy Steel Bars

F.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton.

Open-hearth grade, base..2.45c. a lb. except at Bethlehem where the price is 2.55c. Dlivered price at Detroit is 2.60c.

| S.A.E. Series Numbers | Alloy Differential per 100 lb. |
|---|---|
| 2000 (1½% Nickel) | $0.25 |
| 2100 (2½% Nickel) | 0.55 |
| 2300 (3½% Nickel) | 1.50 |
| 2500 (5% Nickel) | 2.25 |
| 3100 Nickel Chromium | 0.55 |
| 3200 Nickel Chromium | 1.35 |
| 3300 Nickel Chromium | 3.80 |
| 3400 Nickel Chromium | 3.20 |
| 4100 Chromium Molybdenum (0.15 to 0.25 Molybdenum) | 0.50 |
| 4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum) | 0.70 |
| 4600 Nickel Molybdenum (0.20 to 0.30 Molybdenum) (1.50 to 2.00 Nickel) | 1.05 |
| 5100 Chromium Steel (0.60 to 0.90 Chromium) | 0.35 |
| 5100 Chromium Steel (0.80 to 1.10 Chromium) | 0.45 |
| 5100 Chromium Spring Steel | base |
| 6100 Chromium Vanadium Bar | 1.20 |
| 4100 Chromium Vanadium Spring Steel | 0.95 |
| Chromium Nickel Vanadium | 1.50 |
| Carbon Vanadium | 0.95 |

Above prices are for hot-rolled steel bars. The differential for most grades in electric furnace steel is 50c. higher. The differential for cold-drawn bars is ½c. per lb. higher with separate extras. Blooms, billets and slabs under 4x4 in. or equivalent are sold on the bar base. Slabs with a section area of 16 in. and 2½ in. thick or over take the billet base. Sections 4x4 in. to 10x10 in. or equivalent carry a gross ton price, which is the net price for bars for the same analysis. Larger sizes carry extras.

### Cold Finished Bars *

| | Base per Lb. |
|---|---|
| Bars, f.o.b. Pittsburgh mill | 2.10c. |
| Bars, f.o.b. Chicago | 2.15c. |
| Bars, Cleveland | 2.15c. |
| Bars, Buffalo | 2.20c. |
| Bars, Detroit | 2.30c. |
| Bars, eastern Michigan | 2.35c. |
| Shafting, ground, f.o.b. mill, 1¼ in. | 3.40c. |
| 1-3/16 to 1¼ in. | 2.90c. |
| 1-9/16 to 1⅞ in. | 2.75c. |
| 1-15/16 to 2⅜ in. | 2.60c. |
| 2-15/16 to 6 in. | 2.45c. |

* In quantities of 10,000 to 19,000 lb.

## SHEETS, STRIP, TIN PLATE TERNE PLATE

### Sheets

*Hot Rolled*

| | Base per Lb. |
|---|---|
| No. 10, f.o.b. Pittsburgh | 1.75c. |
| No. 10, f.o.b. Gary | 1.85c. |
| No. 10, del'd Detroit | 1.95c. |
| No. 10, del'd Phila. | 2.04c. |
| No. 10, f.o.b. Birmingham | 1.90c. |
| No. 10, f.o.b. dock cars Pacific ports | 2.42½c. |

*Hot-Rolled Annealed*

| | |
|---|---|
| No. 24, f.o.b. Pittsburgh | 2.25c. |
| No. 24, f.o.b. Gary | 2.35c. |
| No. 24, del'd Detroit | 2.45c. |
| No. 24, del'd Phila. | 2.54c. |
| No. 24, f.o.b. Birmingham | 2.40c. |
| No. 24, f.o.b. dock cars Pacific ports | 2.95c. |
| No. 24, wrought iron, Pittsburgh | 4.30c. |

*Heavy Cold-Rolled*

| | |
|---|---|
| No. 10 gage, f.o.b. Pittsburgh | 2.30c. |
| No. 10 gage, f.o.b. Gary | 2.40c. |
| No. 10 gage, del'd Detroit | 2.50c. |
| No. 10 gage, del'd Phila. | 2.59c. |
| No. 10 gage, f.o.b. dock cars Pacific ports | 3.00c. |

*Light Cold-Rolled*

| | |
|---|---|
| No. 20 gage, f.o.b. Pittsburgh | 2.75c. |
| No. 20 gage, f.o.b. Gary | 2.85c. |
| No. 20 gage, del'd Detroit | 2.95c. |
| No. 20 gage, del'd Phila. | 3.04c. |
| No. 20 gage, f.o.b. dock cars Pacific ports | 3.45c. |

*Galvanized Sheets*

| | |
|---|---|
| No. 24, f.o.b. Pittsburgh | 2.85c. |
| No. 24, f.o.b. Gary | 2.95c. |
| No. 24, del'd Phila. | 3.14c. |
| No. 24, f.o.b. Birmingham | 3.00c. |
| No. 24, f.o.b. dock cars Pacific ports | 3.55c. |
| No. 24 Wrought iron Pittsburgh | 4.95c. |

*Long Ternes*

| | |
|---|---|
| No. 24, unassorted 8-lb. coating f.o.b. Pittsburgh | 3.25c |

*Vitreous Enameling Stock*

| | |
|---|---|
| No. 20, f.o.b. Pittsburgh | 2.90c. |

*Tin Mill Black Plate*

| | |
|---|---|
| No. 28, f.o.b. Pittsburgh | 2.65c. |
| No. 28, Gary | 2.75c. |

### Tin Plate

| | Base per Box |
|---|---|
| Standard cokes, f.o.b. P'gh district mill | $5.25 |
| Standard cokes, f.o.b. Gary | 5.35 |
| Standard cokes, f.o.b. cars dock Pacific ports | 5.90 |

### Terne Plate

*(F.o.b. Pittsburgh)*

(Per Package, 20 x 28 in.)

| | |
|---|---|
| 8-lb. coating I.C. | $10.00 |
| 15-lb. coating I.C. | 12.00 |
| 20-lb. coating I.C. | 13.00 |
| 25-lb. coating I.C. | 14.00 |
| 30-lb. coating I.C. | 15.25 |
| 40-lb. coating I.C. | 17.50 |

### Hot-Rolled Hoops, Bands, Strips and Flats under ¼ In.

| | Base per Lb. |
|---|---|
| All widths up to 24 in., P'gh | 1.75c. |
| All widths up to 24 in., Chicago | 1.85c. |
| All widths up to 24 in., del'd Detroit | 1.95c. |
| Cooperage stock, Pittsburgh | 1.85c. |
| Cooperage stock, Chicago | 1.95c. |

### Cold-Rolled Strips

| | |
|---|---|
| F.o.b. Pittsburgh | 2.40c. |
| F.o.b. Cleveland | 2.40c. |
| Del'd Chicago | 2.68c. |
| F.o.b. Worcester | 2.60c. |

*Fender Stock*

| | |
|---|---|
| No. 20, Pittsburgh or Cleveland | 3.10c. |

## WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh and Cleveland.)

| | To Manufacturing Trade Per Lb. |
|---|---|
| Bright wire | 2.20c. |
| Spring wire | 3.20c. |

*To Jobbing Trade*

Extras of 10c. a 100 lb. on joint carloads and 30c. on pooled cars and less-than-carload lots are applied on all merchant wire products. An allowance of $2 a ton is made to jobbers on straight, mixed or joint carloads; $3 a ton is allowed on less-than-carload shipments.

| | Base per Keg |
|---|---|
| Standard wire nails | $2.35 |
| Smooth coated nails | 2.35 |
| Galvanized nails: | |
| 15 gage and coarser | 4.35 |
| 16 gage and finer | 4.85 |
| | Base per 100 Lb. |
| Smooth annealed wire | $2.35 |
| Smooth galvanized wire | 2.70 |
| Polished staples | 3.05 |
| Galvanized staples | 3.30 |
| Barbed wire, galvanized | 2.85 |
| Woven wire fence, base column | 60.00 |

*Chicago and Anderson, Ind., mill prices are $1 a ton over Pittsburgh base (on all products except woven wire fence, for which the Chicago price is $2 above Pittsburgh); Duluth, Minn., and Worcester, Mass., mill prices are $2 a ton over Pittsburgh (except for woven wire fence at Duluth which is $3 over Pittsburgh), and Birmingham mill prices are $3 a ton over Pittsburgh.*

## STEEL AND WROUGHT PIPE AND TUBING

### Welded Pipe

**Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills**

*Butt Weld*

| Steel Inches | Steel Black | Steel Galv. | Wrought Iron Inches | Wrought Iron Black | Wrought Iron Galv. |
|---|---|---|---|---|---|
| ⅛ | 51½ | 29½ | ⅛ | +91½ | +138 |
| ¼ to ⅜ | 57 | 38½ | ¼ & ⅜ | +1½ | +21½ |
| ½ | 62 | 50½ | ½ | 31½ | 15 |
| ¾ | 65½ | 55½ | ¾ | 36½ | 20½ |
| 1 to 3 | 67½ | 58½ | 1 & 1¼ | 39½ | 25½ |
| | | | 1½ | 43½ | 28 |
| | | | 2 | 41½ | 26 |

*Lap Weld*

| | | | | | |
|---|---|---|---|---|---|
| 2 | 63½ | 54½ | 2 | 37 | 22½ |
| 2½ to 3 | 66½ | 57½ | 2½ to 3½ | 38 | 25 |
| 3½ to 6 | 68½ | 59½ | 4 to 8 | 40 | 28½ |
| 7 and 8 | 67½ | 57½ | 9 to 12 | 38 | 24½ |
| 9 and 10 | 67 | 57 | | | |
| 11 and 12 | 66 | 56 | | | |

*Butt Weld, extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| ⅛ | 48½ | 33½ | ⅛ | +13 | +45½ |
| ¼ to ⅜ | 54½ | 41½ | ¼ & ⅜ | +2½ | +31½ |
| ½ | 60 | 51 | ½ | 32½ | 17½ |
| ¾ | 64½ | 55½ | ¾ | 37½ | 22½ |
| 1 to 3 | 66½ | 58½ | 1 to 2 | 43½ | 29 |

*Lap Weld, extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| 2 | 61½ | 53½ | 2 | 40 | 26 |
| 2½ to 3 | 65½ | 57½ | 2½ to 4 | 45½ | 33 |
| 3½ to 6 | 69 | 61 | 4½ to 6 | 45 | 32½ |
| 7 and 8 | 68 | 58 | 7 & 8 | 46 | 33 |
| 9 and 10 | 67 | 57 | 9 to 12 | 41½ | 30 |
| 11 and 12 | 66 | 56 | | | |

Discounts on steel and wrought iron pipe are net and not subject to any points or preferentials.

Note—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

### Boiler Tubes

**Base Discounts, f.o.b. Pittsburgh**

| Steel | | Charcoal Iron | |
|---|---|---|---|
| 2 in. and 2¼ in. | 33 | 1½ in.—1¾ in. | 44 |
| 2½ in.—2¾ in. | 40 | 2 in.—2¼ in.. | 13 |
| 3 in. | 44 | 2½ in.—2¾ in. | 16 |
| 3¼ in.—3½ in. | 47 | 3 in. | 17 |
| 4 in. | 49 | 3¼ in. to 3½ in. | 18 |
| 4½ in. to 6 in. | 42 | 4 in. | 20 |
| | | 4½ in. | 21 |

On lots of a carload or more, the above base discounts are subject to a preferential of two fives on steel and of 10 per cent on chrrcoal iron tubes. Smaller quantities are subject to the following modifications from the base discounts:

Lap welded steel—Under 10,000 lb., 6 points under base and one five; 10,000 lb. to carload 4 points under base and two fives. Charcoal iron—Under 10,000 lb., 2 points under base; 10,000 lb. to carload, base and one five. Exception: On 1½ to 1¾-in. charcoal iron tubes no supplementary discounts are granted, and the discount for 10,000 lb. to a carload is 4 points under base and for less than 10,000 lb. 8 points under base.

*Standard Commercial Seamless Boiler Tubes*

| Cold-Drawn | | | |
|---|---|---|---|
| 1 in. | 68 | 3 in. | 38 |
| 1¼ to 1½ in. | 68 | 3¼ to 3½ in. | 41 |
| 1¾ in. | 68 | 4 in. | 43 |
| 2 to 2¼ in. | 27 | 4½, 5 and 6 in. | 36 |
| 2½ to 2¾ in. | 34 | | |
| *Hot-Rolled* | | | |
| 2 and 2¼ in. | 33 | 3¼ to 3½ in. | 47 |
| 2½ and 2¾ in. | 40 | 4 in. | 49 |
| 3 in. | 44 | 4½, 5 and 6 in. | 42 |

In the case of all sizes except 1-in. to 1¾-in. cold-drawn boiler tubes supplementary discounts of two 5 per cents are allowed on carload lots. On quantities up to 10,000 lb. the base discount is reduced 10 points and a supplementary discount of 5 per cent only is allowed. On quantities 10,000 lb. to 24,999 lb. the base discount is reduced 6 points and a supplementary discount of 5 per cent only is allowed. On 25,000 lb. to a carload the base discount is reduced 2 points and supplementary discounts of two 5 per cents are allowed.

On 1 to 1¾-in. cold-drawn boiler tubes, there are no supplementary discounts. On quantities up to 10,000 lb. the base discount is reduced 12 points; on 10,000 lb. to 24,999 lb., it is reduced 8 points; on 25,000 lb. to a carload it is reduced 2 points.

### Seamless Mechanical Tubing

| | Per Cent Off List |
|---|---|
| Carbon, 0.10% to 0.30% base (carloads) | 55 |
| Carbon, 3.30% to 40% base | 50 |

Plus differential for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above.

## RAILS AND TRACK SUPPLIES

### F.o.b. Mill

| | |
|---|---|
| Standard rails, 60-lb. and heavier, per gross ton | $36.37½ |
| Angle bars, per 100 lb. | 2.55 |

### F.o.b. Code Basing Points

| | |
|---|---|
| Light rails (from billets) per gross ton | $32.00 |
| Light rails (from rail steel) per gross ton | 31.00 |

| | Base per 100 Lb. |
|---|---|
| Spikes, 9/16 in. and larger | $2.40 |
| Spikes, ½ in. and smaller | 2.40 |
| Spikes, boat and barge | 2.40 |
| Tie plates, steel | 1.90 |
| Track bolts, to steam railroads | 3.55 |
| Track bolts, to jobbers, all sizes (per 100 count) | 70 per cent off list |

## BOLTS, NUTS, RIVETS AND SET SCREWS

### Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

| | Per Cent Off List |
|---|---|
| Machine bolts | 70 |
| Carriage bolts | 70 |
| Lag bolts | 70 |
| Plow bolts, Nos. 1, 2, 3 and 7 heads | 70 |
| Hot-pressed nuts, blank or tapped, square | 70 |
| Hot-pressed nuts, blank or tapped, hexagons | 70 |
| C.p.c. and t. square or hex. nuts, blank or tapped | 70 |
| Semi-finished hexagon nuts | 70 |
| Semi-finished hexagon castellated nuts, S.A.E. | 70 |
| Stove bolts in packages, P'gh | 70, 25 and 10 |
| Stove bolts in packages, Ch'go. | 70, 25 and 10 |
| Stove bolts in packages, Cleveland, | 70, 25 and 10 |
| Stove bolts in bulk, P'gh | 83 |
| Stove bolts in bulk, Chicago | 83 |
| Stove bolts in bulk, Cleveland | 83 |
| Tire bolts | 60 |

### Large Rivets

(½-in. and larger)

| | Base per 100 Lb. |
|---|---|
| F.o.b. Pittsburgh or Cleveland | $3.00 |
| F.o.b. Chicago | 3.10 |
| F.o.b. Birmingham | 3.15 |

### Small Rivets

(7/16-in. and smaller)

| | Per Cent Off List |
|---|---|
| F.o.b. Pittsburgh | 70 and 5 |
| F.o.b. Cleveland | 70 and 5 |
| F.o.b. Chicago and Birm'g'm | 70 and 5 |

### Cap and Set Screws

(Freight allowed up to but not exceeding 65c. per 180 lb. on lots of 200 lb. or more

| | Per Cent Off List |
|---|---|
| Milled cap screws, 1 in. dia. and smaller | 75, 10 and 10 |
| Milled standard set screws, case hardened, 1 in. dia. and smaller | 75 and 10 |
| Milled headless set screws, cut thread ⅜ in. and smaller | 75 |
| Upset hex. head cap screw, U.S.S.S. or S.A.E. thread, 1 in. dia. and smaller | 85 |
| Upset set screws cut and oval point | 75 and 10 |
| Milled studs | 65 and 5 |

## STAINLESS STEEL

(18% Cr. 8% Ni. 0.08 to 0.12% C)

(Base Prices, f.o.b. Pittsburgh)

| | Per Lb. |
|---|---|
| Bars | 23c. |
| Plates | 26c. |
| Sheets | 32c. |
| Hot-rolled strip | 20c. |
| Cold-rolled strip | 27c. |

## SEMI-FINISHED STEEL

### Billets, Blooms and Slabs

F.o.b. Pittsburgh, Youngstown, Chicago, Gary, Buffalo, Cleveland, Birmingham.

| | Per Gross Ton |
|---|---|
| Rerolling | $26.00 |
| Forging quality | $31.00 to 34.00 |
| Delivered Detroit | |
| Rerolling | $29.00 |
| Forging quality | 34.00 |

### Sheet Bars

F.o.b. Pittsburgh, Youngstown, Cleveland, Chicago, Buffalo, Canton, Sparrows Point.

| | Per Gross Ton |
|---|---|
| Open-hearth or Bessemer | $26.00 to $30.00 |

### Skelp

F.o.b. Pittsburgh, Youngstown, Chicago, Buffalo, Coatesville, Pa., or Sparrows Point, Md.

| | Per Lb. |
|---|---|
| Grooved | 1.60c. to 1.70c. |
| Universal | 1.60c. to 1.70c. |
| Sheared | 1.60c. to 1.70c. |

### Wire Rods

(Common soft, base)

| | Per Gross Ton |
|---|---|
| Pittsburgh | $36.00 |
| Cleveland | 36.00 |
| Chicago | 37.00 |
| Birmingham | 39.00 |
| Youngstown (del'd) | 37.00 |

## ALLOY STEEL BLOOMS, BILLETS AND SLABS

F.o.b. Pittsburgh, Chicago, Buffalo, Massillon, Canton or Bethlehem.
Base price, $49 a gross ton except at Bethlehem, where it is $51.
Price del'd Detroit is $52.

## CARBON STEEL FORGING INGOTS

F.o.b. Pittsburgh, Youngstown, Gary or Chicago.
Uncropped, $28 to $31 per gross ton.

## COKE, COAL AND FUEL OIL

### Coke

| | Per Net Ton |
|---|---|
| Furnace, f.o.b. Connellsville Prompt | $3.85 |
| Furnace, f.o.b. Connellsville Prompt | $4.60 to 5.60 |
| Foundry, by-product, Chicago ovens, for delivery outside switching district | 8.50 |
| Foundry, by-product, delivered in Chicago switching district | 9.25 |
| Foundry, by-product, New England, delivered | 11.00 |
| Foundry, by-product, Newark or Jersey City, del'd | 8.20 to 8.81 |
| Foundry, by-product, Phila. | 9.00 |
| Foundry, by-product, Cleveland, delivered | 9.25 |
| Foundry, Birmingham | 4.75 |
| Foundry, by-product, St. Louis, f.o.b. ovens | 8.00 |
| Foundry, by-product, del'd St. Louis | 9.00 |

### Coal

| | Per Net Ton |
|---|---|
| Mine run steam coal, f.o.b. W. Pa. mines | $1.80 to $2.05 |
| Mine run coking coal f.o.b. W. Pa. | 2.05 to 2.25 |
| Gas coal, 3/4-in. f.o.b. Pa. mines | 2.25 to 2.55 |
| Mine run gas coal, f.o.b. Pa. mines | 2.05 to 2.45 |
| Steam slack, f.o.b. W. Pa. mines | 1.55 to 1.65 |
| Gas slack, f.o.b. W. Pa. mines | 1.90 to 2.10 |

### Fuel Oil

| | |
|---|---|
| *Per Gal. f.o.b. Bayonne, N. J.* | |
| No. 3 distillate | 4.00c. |
| No. 4 industrial | 3.50c. |
| *Per Gal. f.o.b. Baltimore* | |
| No. 3 distillate | 4.00c. |
| No. 4 industrial | 3.50c. |
| *Per Gal. del'd Chicago* | |
| No. 3 industrial fuel oil | 3.73c. |
| No. 5 industrial fuel oil | 3.00c. |
| *Per Gal. f.o.b. Cleveland* | |
| No. 3 distillate | 5.75c. |
| No. 4 industrial | 5.50c. |

## REFRACTORIES

### Fire Clay Brick

| | Per 1000 f.o.b. Works: High-heat Duty Brick | Intermediate Duty Brick |
|---|---|---|
| Pennsylvania | $45.00 | $40.00 |
| Maryland | 45.00 | 40.00 |
| New Jersey | 55.00 | 43.00 |
| Ohio | 45.00 | 40.00 |
| Kentucky | 45.00 | 40.00 |
| Missouri | 45.00 | 40.00 |
| Illinois | 45.00 | 40.00 |
| Ground fire clay, per ton | 7.00 | |

### Chrome Brick

| | Per Net Ton |
|---|---|
| Standard size | $45.00 |

### Silica Brick

| | Per 1000 f.o.b. Works |
|---|---|
| Pennsylvania | $45.00 |
| Chicago | 54.00 |
| Birmingham | 55.00 |
| Silica clay, per ton | 8.00 |

### Magnesite Brick

| | Per Net Ton |
|---|---|
| Standard sizes, burned, f.o.b. Baltimore and Chester, Pa. | $65.00 |
| Unburned, f.o.b. Baltimore | 55.00 |
| Grain magnesite, f.o.b. Baltimore and Chester, Pa. | 40.00 |
| Domestic, f.o.b. Chewelah, Wash. | 22.00 |

## CAST IRON PIPE

| | Per Net Ton |
|---|---|
| 6-in. and larger, del'd Chicago | $44.00 to $45.00 |
| 4-in., del'd Chicago | 47.00 to 48.00 |
| 6-in. and larger, del'd New York | 43.00 |
| 4-in. del'd New York | 46.00 |
| 6-in., and larger, Birmingham, 36.00 to | 37.00 |
| 4-in. Birmingham | 39.00 to 40.00 |

Class "A" and gas pipe, $3 extra

# Pig Iron, Ores, Ferroalloys

## PIG IRON

### PRICES PER GROSS TON AT BASING POINTS

| Basing Points | No. 2 Fdry. | Malleable | Basic | Bessemer |
|---|---|---|---|---|
| Everett, Mass. | $18.50 | $19.00 | $18.00 | $19.50 |
| Bethlehem, Pa. | 18.50 | 19.00 | 18.00 | 19.50 |
| Birdsboro, Pa. | 18.50 | 19.00 | 18.00 | 19.50 |
| Swedeland, Pa. | 18.50 | 19.00 | 18.00 | 19.50 |
| Sparrows Point, Md. | 18.50 | .... | 18.00 | .... |
| Neville Island, Pa. | 18.00 | 18.00 | 17.00 | 18.50 |
| Sharpsville, Pa. | 18.50 | 18.50 | 18.00 | 19.00 |
| Youngstown | 17.50 | 17.50 | 17.00 | 18.00 |
| Buffalo | 17.50 | 18.00 | 16.50 | 18.50 |
| Erie, Pa. | 18.50 | 19.00 | 18.00 | 19.50 |
| Cleveland | 18.50 | 18.50 | 18.00 | 18.00 |
| Toledo, Ohio | 18.50 | 18.50 | 18.00 | 19.00 |
| Jackson, Ohio | 20.25 | 20.25 | 19.75 | .... |
| Detroit | 17.50 | 17.50 | 17.00 | 18.00 |
| Hamilton, Ohio | 17.50 | 17.50 | 17.00 | 18.00 |
| Chicago | 17.50 | 17.50 | 17.00 | 18.00 |
| Granite City, Ill. | 17.50 | 18.00 | 17.00 | .... |
| Duluth, Minn. | 19.00 | 19.00 | .... | 19.50 |
| Birmingham | 13.50 | .... | 12.50 | 18.00 |
| Provo, Utah | 16.50 | .... | .... | .... |

### DELIVERED PRICES PER GROSS TON AT CONSUMING CENTERS

| | No. 2 Fdry. | Malleable | Basic | Bessemer |
|---|---|---|---|---|
| Boston Switching District | | | | |
| From Everett, Mass | $19.00 | $19.50 | $18.50 | $20.00 |
| From Buffalo | 19.00 | 19.50 | 18.50 | 20.00 |
| Brooklyn | | | | |
| From East Pa. or Buffalo | 20.77 | 21.27 | 20.27 | 21.77 |
| Newark or Jersey City, N. J. | | | | |
| From East. Pa. or Buffalo | 19.89 | 20.39 | 19.39 | 20.89 |
| Philadelphia | | | | |
| From Eastern Pa. | 19.26 | 19.76 | 18.76 | 20.26 |
| Cincinnati | | | | |
| From Hamilton, Ohio | 18.51 | 18.51 | 18.01 | 19.01 |
| Canton, Ohio | | | | |
| From Cleveland and Youngstown | 18.76 | 18.76 | .... | .... |
| Columbus, Ohio | | | | |
| From Hamilton, Ohio | 19.50 | 19.50 | .... | .... |
| Mansfield, Ohio | | | | |
| From Cleveland and Toledo | 20.26 | 20.26 | .... | .... |
| Indianapolis | | | | |
| From Hamilton, Ohio | 19.77 | 19.77 | .... | .... |
| South Bend, Ind. | | | | |
| From Chicago | 19.55 | 19.55 | .... | .... |
| Milwaukee | | | | |
| From Chicago | 18.50 | 18.50 | .... | .... |
| St. Paul | | | | |
| From Duluth | 20.44 | .... | .... | .... |
| Davenport, Iowa | | | | |
| From Chicago | 19.26 | 19.26 | .... | .... |
| Kansas City | | | | |
| From Granite City | 20.04 | 20.54 | .... | .... |

Delivered prices on Southern iron for shipment to Northern points are 38c. a gross ton below delivered prices from the nearest Northern basing points.

### LOW PHOSPHORUS PIG IRON

| | |
|---|---|
| Basing points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y. | $23.00 to $23.50 |
| Johnson City, Tenn. | 19.00 |
| Del'd Chicago | 24.65 |

### GRAY FORGE PIG IRON

| | |
|---|---|
| Valley furnace | $17.50 |

### CHARCOAL PIG IRON

| | |
|---|---|
| Lake Superior furnace | $21.00 |
| Delivered Chicago | 24.04 |
| Delivered Buffalo | 24.28 |

### CANADA

#### Pig Iron

Per gross ton:

| | |
|---|---|
| **Delivered Toronto** | |
| No. 1 fdy., sil. 2.25 to 2.75 | $21.00 |
| No. 2 fdy., sil. 1.75 to 2.75 | 20.50 |
| Malleable | 21.00 |
| **Delivered Montreal** | |
| No. 1 fdy., sil. 2.25 to 2.75 | $22.50 |
| No. 2 fdy., sil. 1.75 to 2.25 | 22.00 |
| Malleable | 22.50 |
| Basic | 22.00 |

#### Ferromanganese

| | Per Gross Ton |
|---|---|
| Domestic, 80%, seaboard, (carload) | $85.00 |
| Domestic, 80%, seaboard, (ton lots) | 92.00 |

#### Spiegeleisen

| | Per Gross Ton Furnace |
|---|---|
| Domestic, 19 to 21% | $26.00 |

#### Electric Ferrosilicon

| | Per Gross Ton Delivered |
|---|---|
| 50% (carloads) | $77.50 |
| 50% (ton lots) | 85.00 |
| 75% (carloads) | 126.00 |
| 75% (ton lots) | 136.00 |
| 14% to 16% (f.o.b.) Welland, Ont. (in carloads) (duty paid) | 31.00 |
| 14% to 16% (less carloads) | 38.50 |

#### Silvery Iron

F.o.b. Jackson, Ohio, Furnace

| Per Gross Ton | | Per Gross Ton | |
|---|---|---|---|
| 6% | $22.25 | 12% | $29.25 |
| 7% | 23.25 | 13% | 30.75 |
| 8% | 24.25 | 14% | 32.75 |
| 9% | 25.25 | 15% | 33.75 |
| 10% | 26.25 | 16% | 35.25 |
| 11% | 27.75 | 17% | 36.75 |

#### Bessemer Ferrosilicon

F.o.b. Jackson, Ohio, Furnace

| Per Gross Ton | | Per Gross Ton | |
|---|---|---|---|
| 10% | $27.25 | 14% | $33.25 |
| 11% | 28.75 | 15% | 34.75 |
| 12% | 30.25 | 16% | 36.25 |
| 13% | 31.75 | 17% | 37.75 |

Manganese 1½ to 3%, $1 a ton additional. For each unit of manganese over 3%, $1 a ton additional. Phosphorus 0.75% or over, $1 ton additional.

#### Other Ferroalloys

| | |
|---|---|
| Ferrotungsten, per lb. contained W, del., carloads | $1.25 to $1.25 |
| Ferrotungsten, less carloads | 1.30 to 1.35 |
| Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr. per lb. contained Cr. delivered, in carloads | 10.00c. |
| Ferrochromium, 2% carbon | 16.50c. to 17.00c. |
| Ferrochromium, 1% carbon | 17.50c. to 18.00c. |
| Ferrochromium, 0.10% carbon | 19.50c. to 20.00c. |
| Ferrochromium, 0.06% carbon | 20.00c. to 20.50c. |
| Ferrovanadium, del., per lb. contained V | $2.70 to $2.90 |
| Ferrocarbontitanium, 15 to 18% Ti, 6 to 8% C, f.o.b. furnace carload and contract per net ton | $137.50 |
| Ferrophosphorus, electric, or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per gross ton with $2 unitage | 50.00 |
| Ferrophosphorus, electric, 24% f.o.b. Anniston, Ala., per gross ton with $2.75 unitage | 65.00 |
| Ferromolybdenum, per lb. Mo., del. | 95c. |
| Calcium molybdate, per lb. Mo., del. | 80c. |
| Silico spiegel, per ton, f.o.b. furnace, car lots | $38.00 |
| Ton lots or less, per ton | 45.50 |
| Silico-manganese, gross ton, delivered: | |
| 2.50% carbon grade | 90.00 |
| 2% carbon grade | 95.00 |
| 1% carbon grade | 105.00 |
| Spot prices | $5 a ton higher |

### Ores

*Lake Superior Ores, Delivered Lower Lake Ports*

| | Per Gross Ton |
|---|---|
| Old range, Bessemer, 51.5% iron | $4.80 |
| Old range, non-Bessemer, 51.50% iron | 4.65 |
| Mesabi, Bessemer, 51.50% iron | 4.65 |
| Mesabi, non-Bessemer, 51.50% iron | 4.50 |
| High phosphorus, 51.50% iron | 4.40 |

*Foreign Ore, c.i.f. Philadelphia or Baltimore*

| | Per Unit |
|---|---|
| Iron, low phos., copper free, 55 to 58% iron, dry Spanish or Algerian | 9.50c. |
| Iron, low phos., Swedish, average 68½% iron | 9.50c. |
| Iron, basic or foundry, Swedish, average, 65% iron | 9c. |
| Iron, basic or foundry, Russian, aver. 65% iron | 9c. |
| Manganese, Caucasian, washed 52% | 24c. |
| Manganese, African, Indian, 44-48% | 21c. |
| Manganese, African, Indian, 49-51% | 24c. |
| Manganese, Brazilian, 46 to 48½ | 20c. |

| | Per Net Ton Unit |
|---|---|
| Tungsten, Chinese, wolframite, duty paid, delivered* | $15.00 |
| Tungsten, domestic scheelite, delivered | $14.50 to 15.00 |

| | Per Gross Ton |
|---|---|
| Chrome, 45%, $Cr_2O_3$, crude, c.i.f. Atlantic Seaboard | $17.00 |
| Chrome, 48% $Cr_2O_3$, c.i.f. Atlantic Seaboard | 20.00 |

*Quotations nominal in absence of sales.

### Fluorspar

| | Per Net Ton |
|---|---|
| Domestic, washed gravel, 85-5 f.o.b. Kentucky and Illinois mines for all-rail shipment | $17.00 |
| Same grade for Ohio River barge shipment for Kentucky and Illinois River landings | 18.50 |
| No. 2 lump, 85-5, f.o.b. Kentucky and Illinois mines | $17.50 to 18.00 |
| Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic port, duty paid | 19.00 |
| Domestic, No. 1 ground-bulk, 95 to 98% calcium fluoride, not over 2½% silicon, f.o.b. Illinois and Kentucky mines | 30.00 |

# Iron and Steel Scrap

## PITTSBURGH

Per gross ton delivered consumers' yards:

| | |
|---|---|
| No. 1 heavy melting steel | $14.00 to $14.50 |
| No. 2 heavy melting steel | 12.50 to 13.00 |
| No. 2 railroad wrought | 14.00 to 14.50 |
| Scrap rails | 14.00 to 14.50 |
| Rails 3 ft. and under | 15.50 to 16.00 |
| Sheet bar crops, ordinary | 15.00 to 15.50 |
| Compressed sheet steel | 14.00 to 14.50 |
| Hand bundled sheet steel | 12.50 to 13.00 |
| Hvy. steel axle turnings | 13.00 to 13.50 |
| Machine shop turning | 10.50 to 11.00 |
| Short shov. steel turnings | 10.50 to 11.00 |
| Short mixed borings and turnings | 8.50 to 9.00 |
| Cast iron borings | 8.50 to 9.00 |
| Cast iron carwheels | 13.00 to 13.50 |
| Heavy breakable cast | 11.50 to 12.00 |
| No. 1 cast | 13.50 to 14.00 |
| Railr. knuckles and couplers | 16.00 to 16.50 |
| Rail coil and leaf springs | 16.00 to 16.50 |
| Rolled steel wheels | 16.00 to 16.50 |
| Low phos. billet crops | 17.00 to 17.50 |
| Low phos. sheet bar crops | 16.50 to 17.00 |
| Low phos. plate scrap | 15.50 to 16.00 |
| Low phos. punchings | 16.00 to 16.50 |
| Steel car axles | 17.00 to 17.50 |

## CHICAGO

Delivered Chicago district consumers:

| | Per Gross Ton |
|---|---|
| Heavy melting steel | $11.50 to $12.00 |
| Automobile hvy. melt. steel | 10.75 to 11.25 |
| Shoveling steel | $11.50 to $12.00 |
| Hydraulic comp. sheets | 10.75 to 11.25 |
| Drop forge flashings | 9.75 to 10.25 |
| No. 1 busheling | 10.50 to 11.00 |
| Rolled carwheels | 12.50 to 13.00 |
| Railroad tires | 12.50 to 13.00 |
| Railroad leaf springs | 12.50 to 13.00 |
| Axle turnings | 9.50 to 10.00 |
| Steel couples and knuckles | 12.25 to 12.75 |
| Coil springs | 12.75 to 13.25 |
| Axle turnings (elec. fur.) | 10.50 to 11.00 |
| Low phos. punchings | 12.25 to 12.75 |
| Low phos. plates, 12 in. and under | 12.75 to 13.25 |
| Cast iron borings | 7.25 to 7.75 |
| Short shoveling turnings | 7.75 to 8.25 |
| Machine shop turnings | 7.00 to 7.50 |
| Rerolling rails | 12.50 to 13.00 |
| Steel rails, less than 3 ft. | 12.50 to 13.00 |
| Steel rails, less than 2 ft. | 13.00 to 13.50 |
| Angle bars, steel | 12.25 to 12.75 |
| Cast iron carwheels | 11.75 to 12.25 |
| Railroad malleable | 12.00 to 12.50 |
| Agricultural malleable | 10.00 to 10.50 |

| | Per Net Ton |
|---|---|
| Iron car axles | $12.75 to $13.25 |
| Steel car axles | 12.00 to 12.50 |
| No. 1 railroad wrought | 9.50 to 10.00 |
| No. 2 railroad wrought | 10.25 to 10.75 |

| | | |
|---|---|---|
| No. 2 busheling | $4.50 to | $5.00 |
| Locomotive tires, smooth | 10.50 to | 11.00 |
| Pipe and flues | 5.50 to | 6.00 |
| No. 1 machinery cast | 9.50 to | 10.00 |
| Clean automobile cast | 9.00 to | 9.50 |
| No. 1 railroad cast | 9.00 to | 9.50 |
| No. 1 agricultural cast | 8.00 to | 8.50 |
| Stove plate | 7.50 to | 8.00 |
| Grate bars | 6.50 to | 7.00 |
| Brake shoes | 8.50 to | 9.00 |

## PHILADELPHIA

Per gross ton delivered consumers' yards:

| | | |
|---|---|---|
| No. 1 heavy melting steel | $11.50 to | $12.00 |
| No. 2 heavy melting steel | 9.50 to | 10.00 |
| No. 1 railroad wrought | 12.00 to | 13.00 |
| Bundled sheets | .... | 9.50 |
| Hydraulic compressed, new | .... | 10.00 |
| Hydraulic compressed, old | 8.50 to | 9.00 |
| Machine shop turnings | .... | 7.50 |
| Heavy axle turnings | 10.00 to | 10.50 |
| Cast borings | 5.50 to | 6.00 |
| Heavy breakable cast | 11.50 to | 12.00 |
| Stove plate (steel works) | 8.50 to | 9.00 |
| No. 1 low phos. heavy | 15.00 to | 15.50 |
| Couplers and knuckles | 14.50 to | 15.00 |
| Rolled steel wheels | 14.50 to | 15.00 |
| No. 1 blast furnace | 5.50 to | 6.00 |
| Spec. iron and steel pipe | 9.00 to | 9.50 |
| Shafting | 16.00 to | 16.50 |
| Steel axles | .... | 14.50 |
| No. 1 forge fire | .... | 11.00 |
| Cast iron car wheels | .... | 13.00 |
| No. 1 cast | 13.00 to | 13.50 |
| Cast borings (chem.) | 12.00 to | 14.00 |
| Steel rails for rolling | .... | 13.00 |

## CLEVELAND

Per gross ton delivered consumers' yards:

| | | |
|---|---|---|
| No. 1 heavy melting steel | $12.00 to | $12.50 |
| No. 2 heavy melting steel | 11.50 to | 12.00 |
| Compressed sheet steel | 11.50 to | 12.00 |
| Light bundled sheet stampings | 8.50 to | 9.00 |
| Drop forge flashings | 11.50 to | 12.00 |
| Machine shop turnings | 9.00 to | 9.50 |
| Short shoveling turnings | 9.00 to | 9.50 |
| No. 1 busheling | 11.00 to | 11.50 |
| Steel axle turnings | 10.00 to | 10.50 |
| Law phos. billet crops | 14.50 to | 15.00 |
| Cast iron borings | 8.75 to | 9.25 |
| Mixed borings and sheet turnings | 9.00 to | 9.50 |
| No. 2 busheling | 9.00 to | 9.50 |
| No. 1 cast | 11.00 to | 11.50 |
| Railroad grate bars | 7.50 to | 8.00 |
| Stove plate | 7.00 to | 7.50 |
| Rails under 2 ft. | 15.00 to | 15.50 |
| Rails for rolling | 16.50 to | 17.00 |
| Railroad malleable | 12.00 to | 12.50 |
| Cast iron carwheels | .... | 12.25 |

## BUFFALO

Per gross ton, f.o.b. Buffalo consumers' plants:

| | | |
|---|---|---|
| No. 1 heavy melting steel | .... | $12.50 |
| No. 2 heavy melting scrap | .... | 11.00 |
| Scrap rails | $12.25 to | 12.75 |
| New hydraul. comp. sheets | .... | 11.00 |
| Old hydraul. comp. sheets | .... | 10.50 |
| Drop forge flashings | .... | 11.00 |
| No. 1 busheling | .... | 11.00 |
| Hvy. steel axle turnings | 10.00 to | 10.50 |
| Machine shop turnings | 6.50 to | 7.00 |
| Knuckles and couplers | 14.00 to | 14.50 |
| Coil and leaf springs | 14.00 to | 14.50 |
| Rolled steel wheels | 14.00 to | 14.50 |
| Low phos. billet crops | 14.00 to | 14.50 |
| Short shov. steel turnings | 7.50 to | 8.00 |
| Short mixed borings and turnings | 7.50 to | 8.00 |
| Cast iron borings | 7.50 to | 8.00 |
| No. 2 busheling | 7.50 to | 8.00 |
| Steel car axles | 13.00 to | 13.50 |
| Iron axles | 13.00 to | 13.50 |
| No. 1 machinery cast | .... | 13.00 |
| No. 1 cupola cast | 12.00 to | 12.50 |
| Stove plate | 10.25 to | 10.75 |
| Steel rails, 3 ft. and under | 14.50 to | 15.00 |
| Cast iron carwheels | 12.50 to | 13.00 |
| Industrial malleable | 12.50 to | 13.00 |
| Railroad malleable | 12.50 to | 12.50 |
| Chemical borings | 10.00 to | 11.00 |

## BIRMINGHAM

Per gross ton delivered consumers' yards:

| | | |
|---|---|---|
| Heavy melting steel | .... | $10.00 |
| Scrap steel rails | .... | 9.00 |
| Short shoveling turnings | .... | 8.50 |
| Stove plates | $7.00 to | 7.50 |
| Steel axles | 10.50 to | 11.00 |
| Iron axles | 10.50 to | 11.00 |
| No. 1 railroad wrought | .... | 7.00 |
| Rails for rolling | .... | 10.50 |
| No. 1 cast | 9.00 to | 9.50 |
| Tramcar wheels | 9.00 to | 9.50 |
| Cast iron borings, chem. | .... | 8.00 |

## ST. LOUIS

Per gross ton delivered consumers' yards:

| | | |
|---|---|---|
| Selected heavy steel | $9.25 to | $9.75 |
| No. 1 heavy melting | 9.00 to | 9.50 |
| No. 2 heavy melting | 8.00 to | 8.50 |
| No. 1 locomotive tires | 9.50 to | 10.00 |
| Misc. stand.-sec. rails | 9.25 to | 9.75 |
| Railroad springs | 11.00 to | 11.50 |
| Bundled sheets | 7.75 to | 8.25 |
| No. 2 railroad wrought | 9.00 to | 9.50 |
| No. 1 busheling | 6.75 to | 7.25 |
| Cast iron borings and shoveling turnings | 5.00 to | 5.50 |
| Rails for rolling | 10.75 to | 11.25 |
| Machine shop turnings | 5.00 to | 5.50 |
| Heavy turnings | 6.00 to | 6.50 |
| Steel car axles | 10.50 to | 11.00 |
| Iron car axles | 13.00 to | 13.50 |
| No. 1 railroad wrought | 6.00 to | 6.50 |
| Steel rails less than 3 ft. | 12.00 to | 12.50 |
| Steel angle bars | 9.75 to | 10.25 |
| Cast iron carwheels | 8.00 to | 8.50 |
| No. 1 machinery cast | 9.50 to | 10.00 |
| Railroad malleable | 9.75 to | 10.25 |
| No. 1 railroad cast | 9.00 to | 9.50 |
| Stove plate | 6.50 to | 7.00 |
| Agricult. malleable | 9.00 to | 9.50 |

## BOSTON

Dealers' buying prices per gross ton:

| | | |
|---|---|---|
| No. 1 heavy melting steel | $7.75 to | $8.00 |
| Scrap T rails | 7.75 to | 8.00 |
| No. 2 steel | 6.25 to | 6.50 |
| Breakable cast | 6.50 to | 7.00 |
| Machine shop turnings | 3.75 to | 4.00 |
| Bundled skeleton, long | 6.00 to | 6.25 |
| Forge flashings | 5.75 to | 6.00 |
| Blast furnace scrap | 2.75 to | 3.00 |
| Shafting | 11.00 to | 11.50 |
| Steel car axles | 10.50 to | 11.00 |
| Wrought pipe | 5.00 to | 5.25 |
| Cast iron borings, chemical | 8.00 to | 8.50 |

Per gross ton delivered consumers' yards:

| | | |
|---|---|---|
| Textile cast | $10.00 to | $10.50 |
| No. 1 machinery cast | 10.00 to | 10.25 |
| Stove plate | 7.00 to | 7.25 |
| Railroad malleable | 11.00 to | 11.50 |

## NEW YORK

Dealers' buying prices per gross ton:

| | | |
|---|---|---|
| No. 1 heavy melting steel | *$8.00 to | $9.50 |
| No. 2 heavy melting steel | *7.00 to | 8.00 |
| Heavy breakable cast | 8.00 to | 8.25 |
| No. 1 machinery cast | .... | 8.50 |
| No. 2 cast | 7.00 to | 7.50 |
| Stove plate | .... | 6.00 |
| Steel car axles | 10.75 to | 11.50 |
| No. 1 railroad wrought | 7.50 to | 8.00 |
| No. 1 yard wrought, long | 6.50 to | 7.00 |

*Nominal.

| | | |
|---|---|---|
| Spec. iron and steel pipe | 5.75 to | 6.00 |
| Forge fire | $5.50 to | $6.00 |
| Rails for rerolling | 9.50 to | 10.00 |
| Short shoveling turnings | 3.00 to | 4.00 |
| Machine shop turnings | 3.50 to | 4.00 |
| Cast borings | 4.50 to | 4.75 |
| No. 1 blast furnace | 2.50 to | 4.00 |
| Cast borings (chemical) | 11.00 to | 11.50 |
| Unprepared yard iron and steel | 5.00 to | 5.50 |

Per gross ton, delivered local foundries:

| | |
|---|---|
| No. 1 machinery cast | $12.00 |
| No. 1 hvy. cast (cupola size) | 10.50 |
| No. 2 cast | 9.00 |

## CINCINNATI

Dealers' buying prices per gross ton:

| | | |
|---|---|---|
| Heavy melting steel | $8.75 to | $9.50 |
| Scrap rails for melting | 9.50 to | 10.00 |
| Loose sheet clippings | 7.00 to | 7.50 |
| Bundled sheets | 7.00 to | 7.50 |
| Cast iron borings | 6.50 to | 7.00 |
| Machine shop turnings | 6.00 to | 6.50 |
| No. 1 busheling | 7.50 to | 8.00 |
| No. 2 busheling | 4.00 to | 4.50 |
| Rails for rolling | 10.00 to | 10.50 |
| No. 1 locomotive tires | 9.50 to | 10.00 |
| Short rails | 12.25 to | 12.75 |
| Cast iron carwheels | 8.75 to | 9.25 |
| No. 1 machinery cast | 10.00 to | 10.50 |
| No. 1 railroad cast | 9.50 to | 10.00 |
| Burnt cast | 7.00 to | 7.50 |
| Stove plate | 7.00 to | 7.50 |
| Agricultural malleable | 9.00 to | 9.50 |
| Railroad malleable | 9.00 to | 9.50 |

## DETROIT

Dealers' buying prices per gross ton:

| | | |
|---|---|---|
| Heavy melting steel | $9.50 to | $10.00 |
| Borings and short turnings | 7.25 to | 7.75 |
| Long turnings | 6.50 to | 7.00 |
| No. 1 machinery cast | 11.00 to | 11.50 |
| Automotive cast | 12.00 to | 12.50 |
| Hydraul. comp. sheets | 9.75 to | 10.25 |
| Stove plate | 8.00 to | 8.50 |
| New factory busheling | 8.50 to | 9.00 |
| Old No. 2 busheling | 5.75 to | 6.25 |
| Sheet clippings | 6.00 to | 6.50 |
| Flashings | 8.00 to | 8.50 |
| Low phos. plate scrap | 9.75 to | 10.25 |

## CANADA

Dealers' buying prices per gross ton:

| | Toronto | Montreal |
|---|---|---|
| Heavy melting steel | $5.50 | $5.50 |
| Rails, scrap | 6.00 | 4.50 |
| Machine shop turnings | 2.50 | 2.50 |
| Boiler plate | 4.50 | 4.50 |
| Heavy axle turnings | 2.50 | 2.50 |
| Cast borings | 3.00 | 3.00 |
| Steel borings | 2.00 | 2.00 |
| Wrought pipe | 2.50 | 2.50 |
| Steel axles | 4.50 | 6.00 |
| Axles, wrought iron | 4.50 | 6.50 |
| No. 1 machinery cast | 7.75 | 9.00 |
| Stove plate | 4.50 | 5.00 |
| Standard carwheels | 7.25 | 7.00 |
| Malleable | 6.75 | 7.00 |

# Warehouse Prices for Steel Products

## PITTSBURGH

| | Base per Lb. |
|---|---|
| Plates | 3.95c. |
| Structural shapes | 3.95c. |
| Soft steel bars and small shapes | 3.85c. |
| Reinforcing steel bars | 3.00c. |
| Cold-finished and screw stock— | |
| Rounds and hexagons | *3.45c. |
| Squares and flats | *3.45c. |
| Hoops and bands, under ¼ in. | 3.10c. |
| Hot-rolled annealed sheets (No. 24), 25 or more bundles | 3.15c. |
| Galv. sheets (No. 24), 25 or more bundles | 3.70c. |
| Hot-rolled sheets (No. 10) | 2.85c. |
| Galv. corrug. sheets (No. 28), per square (more than 3750 lb.) | $3.33 |
| Spikes, large | 2.90c. |
| Track bolts, all sizes, per 100 count, | 65 per cent off list. |
| Machine bolts, 100 count, | 65 per cent off list. |
| Carriage bolts, 100 count, | 65 per cent off list. |
| Nuts, all styles, 100 count, | 65 per cent off list. |
| Large rivets, base per 100 lb. | $3.25 |
| Wire, black, soft ann'l'd, base per 100 lb. | *2.575c. |
| Wire, galv. soft, base per 100 lb. | *2.925c. |
| Common wire nails, per keg | *2.557c. |
| Cement coated nails, per keg | *2.557c. |

On plates, structurals, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applied to orders of 400 to 9999 lb.

*Delivered in Pittsburgh switching district.

## CHICAGO

| | Base per Lb. |
|---|---|
| Plate sand structural shapes | 3.10c. |
| Soft steel bars | 2.90c. |
| Cold-fin. steel bars and shafting | |
| Rounds and hexagons | 3.40c. |
| Flats and squares | 3.40c. |
| Bands, 3/16 in. (in Nos. 10 and 12 gages) | 3.20c. |
| Hoops (No. 14 gage and lighter) | 3.20c. |
| Hot-rolled annealed sheets (No. 24) | 3.70c. |
| Galv. sheets (No. 24) | 4.30c. |
| Hot-rolled sheets (No. 10) | 2.85c. |
| Spikes (9/16 in. and lighter) | 3.50c. |
| Track bolts | 4.65c. |
| Rivets, structural (keg lots) | 3c. |
| Rivets, boiler (keg lots) | 3.10c. |

| | Per Cent Off List |
|---|---|
| Machine bolts | 60 and 5 |
| Carriage bolts | 60 and 5 |
| Coach and lag screws | 60 and 5 |
| Hot-pressed nuts, sq. tap. or blank | 60 and 5 |
| Hot-pressed nuts, hex., tap or blank | 60 and 5 |
| Hex. head and cap screws | 50 |
| Cup point set screws | 70 |
| Flat head bright wood screws | 37½ and 10 |
| Spring cotters | 50 |
| Stove bolts in full packages | 72½ |
| Rd. hd. tank rivets, 7/16 in. and smaller | 65 |
| Wrought washers | $5.50 off list |
| No. 8 black ann'l'd wire per 100 lb. | $3.75 |
| Com. wire nails, base per keg | 2.70c. |
| Cement c't'd nails, base per keg | 2.70c. |

## NEW YORK

| | Base per Lb. |
|---|---|
| Plates | 3.50c. |
| Structural shapes | 3.27c. |
| Soft steel bars, small shapes | 3.17c. |
| Iron bars | 3.24c. |
| Iron bars, swed. charcoal | 6.50 to 7.25c. |
| Cold-fin. shafting and screw stock; | |
| Rounds and hexagons | 3.92c. |
| Flats and squares | 4.42c. |
| Cold-roll. strip, soft and quarter hard | 4.00c. |
| Hoops | 3.42c. |
| Bands | 3.42c. |
| Hot-rolled sheets (No. 10) | 3.17c. |
| Hot-rolled ann'l'd sheets (No. 24*) | 3.65c. |
| Galvanized sheets (No. 24*) | 4.25c. |
| Long terne sheets (No. 24) | 5.00c. |
| Standard tool steel | 11.00c. |
| Wire, black annealed (No. 10) | 3.50c. |
| Wire, galv. (No. 10) | 3.80c. |
| Tire steel, 1 x ½ in. and larger | 3.50c. |
| Open hearth spring steel | 4.00c. to 10.00c. |
| Common wire nails, base, per keg | $3.00 |

| | Per Cent Off List |
|---|---|
| Machine bolts, cut thread: | |
| Up to 1 in. dia. inclusive | 60 |
| Over 1 in. dia. | 50 |
| Carriage bolts, cut thread: | |
| Up to ⅜ in. dia. inclusive | 60 |
| Over ⅜ in. dia. | 50 |

| | Per 100 Ft. |
|---|---|
| Boiler tubes: | |
| Lap welded, 2-in. | $18.05 |
| Seamless welded, 2-in. | 19.24 |
| Charcoal iron, 2-in. | 24.94 |
| Charcoal iron, 4-in. | 63.65 |

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

## ST. LOUIS

| | Base per Lb. |
|---|---|
| Plates and struc. shapes | 3.34c. |
| Bars, soft steel or iron | 3.14c. |
| Cold-fin. rounds, shafting, screw stock | 3.74c. |
| Hot-rolled annealed sheets (No. 24) | 3.94c. |
| Galv. sheets (No. 24) | 4.54c. |
| Hot-rolled sheets (No. 10) | 3.19c. |
| Black corrug. sheets (No. 24) | 3.99c. |
| *Galv. corrug. sheets | 4.59c. |
| Structural rivets | 3.59c. |
| Boiler rivets | 3.69c. |

| | Per Cent Off List |
|---|---|
| Tank rivets, 7/16 in. and smaller | 60 |
| Machine and carriage bolts, lag screws, fitting up bolts, bolt ends, plow bolts, hot-pressed nuts, square and hexagon, tapped or blank, semi-finished nuts | |
| 1000 lb. or over | 60 |
| 200 to 999 lb. | 55 and 5 |
| 100 to 199 lb. | 50 and 5 |
| Less than 100 lb. | 50 |

*No. 26 and lighter take special prices.

## PHILADELPHIA

| | Base per Lb. |
|---|---|
| *Plates, ¼-in. and heavier | 2.75c. |
| *Structural shapes | 2.75c. |
| *Soft steel bars, small shapes, iron bars (except bands) | 2.75c. |
| ‡Reinforc. steel bars, sq. twisted and deformed | 2.505c. |
| Cold-finished steel bars | 3.75c. |
| *Steel hoops | 3.30c. |
| *Steel bands, No. 12 to 3/16 in., incl. | 3.05c. |
| Spring steel | 5.00c. |
| †Hot-rolled annealed sheets (No. 24) | 3.40c. |
| †Galvanized sheets (No. 24) | 4.00c. |
| *Hot-rolled annealed sheets (No. 10) | 2.95c. |
| Diam. pat. floor plates, ¼ in. | 4.75c. |
| Swedish iron bars | 6.25c. |

These prices are subject to quantity differentials except on reinforcing and Swedish iron bars.

*Base prices subject to deduction on orders aggregating 4000 lb. or over.

†For 50 bundles or over.

‡For 5 tons or more, exclusive of cutting charge.

## CLEVELAND

| | Base per Lb. |
|---|---|
| Plates and struc. shapes | 3.21c. |
| Soft steel bars | 2.90c. |
| Reinforc. steel bars | 2.00c. to 2.50c. |
| Cold-finished steel bars | 3.40c. |
| Flat rolled steel under ¼ in. | 3.26c. |
| Cold-finished strip | 5.55c. |
| Hot-rolled annealed sheets (No. 24) | 3.76c. |
| Galvanized sheets (No. 24) | 4.36c. |
| Hot-rolled sheets (No. 10) | 3.01c. |
| Black ann'l'd wire, per 100 lb. | $2.45 |
| No. 9 galv. wire, per 100 lb. | 2.80 |
| Com. wire nails, base per keg | 2.45 |

## CINCINNATI

| | Base per Lb. |
|---|---|
| Plates and struc. shapes | 3.80c. |
| Bars, soft steel or iron | 3.10c. |
| New billet reinforc. bars | 3.10c. |
| Rail steel reinforc. bars | 3.10c. |
| Hoops and bands, 3/16 in. and lighter | 3.35c. |
| Cold-finished bars | 3.70c. |
| Hot-rolled annealed sheets (No. 24) | 3.85c. |
| Galv. sheets (No. 24) | 4.45c. |
| Hot-rolled sheets (No. 10) | 3.10c. |
| Structural rivets | 4.00c. |
| Small rivets | 60 per cent off list |
| No. 9 ann'l'd wire, per 100 lb. | $3.00 |
| Com. wire nails, base per keg (10 to 49 kegs) | 2.65 |
| Larger quantities | 2.50 |
| Cement c't'd nails, base 100-lb. keg | 2.95 |
| Chain, 1-in., per 100 lb. | 4.35 |

| | Net per 100 Ft. |
|---|---|
| Seamless steel boiler tubes, 2-in. | $17.89 |
| 4-in. | 41.69 |
| Lap-welded steel boiler tubes, 2-in. | 16.61 |
| 4-in. | 38.73 |

## BUFFALO

| | Base per Lb. |
|---|---|
| Plates | 3.25c. |
| Struc. shapes | 3.15c. |
| Soft steel bars | 2.95c. |
| Reinforcing bars | 1.95c. |
| Cold-fin. flats and sq. | 3.55c. |
| Round and hex. | 3.55c. |
| Cold-rolled strip steel | 5.25c. |
| Hot-rolled annealed sheets (No. 24) | 3.65c. |
| Heavy hot-rolled sheets, 3/16 in., 24 to 48 in. wide | 3.42c. |
| Galv. sheets (No. 24) | 4.25c. |
| Bands | 3.22c. |
| Hoops | 3.22c. |
| Hot-rolled unannealed sheets | 3.07c. |
| Com. wire nails, base per keg | $3.00 |
| Black wire, base per 100 lb. | 2.35 |

## BOSTON

| | Per Lb. |
|---|---|
| Beams, channels, angles, tees, zees | 3.42c. |
| H beams and shapes | 3.42c. |
| Plates—sheared, tank and univ. mill, ¼ in. thick and heavier | 3.42c. |
| Floor plates, diamond pattern | 5.18c. |
| Bar and bar shapes (mild steel) | 3.25c. |
| Bands 3/16 in. thick and No. 12 ga. incl. | 3.50c. to 4.50c. |
| Half rounds, half ovals, ovals and bevels | 4.50c. |
| Tire steel | 4.50c. |
| Cold-finished rounds and hexagons | 3.70c. |
| Cold-rolled strip steel | 5.20c. |
| Cold-finished squares and flats | 4.20c. |
| Blue annealed sheets, No. 10 ga. | 3.25c. |
| One pass cold-rolled sheets No. 24 ga. | 3.50c. |
| Galvanized steel sheets, No. 24 ga. | 4.60c. |
| Lead coated sheets, No. 24 ga. | 5.65c. |

Prices delivered by truck in metropolitan Boston, subject to quantity differentials.

## PACIFIC COAST

| | Base per Lb. | | |
|---|---|---|---|
| | San Francisco | Los Angeles | Seattle |
| Plates, tank and U.M. | 3.50c. | 3.40c. | 3.40c. |
| Shapes, standard | 3.50c. | 3.40c. | 3.40c. |
| Wide-flanged beams and columns | 3.70c. | 3.60c. | 3.60c. |
| Soft steel bars | 3.55c. | 3.40c. | 3.40c. |
| Reinforcing bars | 2.35c. | 2.35c. | 2.35c. |
| Hot-rolled annealed sheets (No. 24) | 4.25c. | 4.15c. | 4.25c. |
| Hot-rolled sheets (No. 10) | 3.75c. | 3.65c. | 3.65c. |
| Galv. sheets (No. 24) | 4.85c. | 4.75c. | 4.85c. |
| Struc. rivets, ½ in. and larger | 6.25c. | 6.00c. | 5.00c. |
| Cold finished steel Rounds | 5.95c. | 5.95c. | 4.75c. |
| Squares and hexagons | 7.20c. | 7.20c. | 6.00c. |
| Flats | 7.70c. | 7.70c. | 7.00c. |
| Common wire nails —base per keg less carload | $3.35 | $3.25 | $3.45 |

All items subject to differentials for quantity.

# Valley Steel Makers Build-up Heavy Backlogs on Price Rise

YOUNGSTOWN, April 17.—Valley steel makers can boast of abnormally heavy commitments for second quarter if maximum contract tonnage is eventually specified by customers. Most consumers have signed "requirements" contracts, with maximum tonnage provision, and it is assumed that, with higher prices to be established this week on practically all steel products, full specifications can in most cases be expected. Sales offices are already pressing customers for April specifications, but the response thus far has been sluggish. Perhaps the hesitancy is occasioned partly by uncertain labor conditions in the automotive industry.

In the case of sheets and strip, second quarter bookings, if gaged by the maximum tonnage stipulated in contracts, represent more than the normal output of finishing mills in this district for three months. Hence, if consumers take full advantage of contract privileges, sheet and strip mills will likely be taxed to fulfill commitments by the close of the contract period. This oversold position, however, is somewhat hypothetical, as contracts in most cases call for equimonthly shipments. Any unshipped quota at the end of a month is automatically cancelled. The only real strain on finishing mills, therefore, will probably be in June, when, if heavy specifications are received, mills will naturally be crowded to meet all obligations by the final shipping date on June 30.

Orders for sheets and strip reflect a wide variety of consumer requirements. The heaviest tonnages booked for this quarter, however, come from the automotive industry. Black sheets have been uncommonly active as a result of heavy demand from barrel manufacturers, who in some cases have ordered fairly substantial tonnages for spot shipment. Advanced quotations of $5 to $8 a ton on sheets and strip were established on April 16 by at least one Valley producer.

Tin plate mills are running practically at capacity. Specifications still are fairly heavy, and the chances are that no serious letdown in operations will occur for at least another month. A recession even then is considered unlikely if the expected seasonal crops meet current optimistic expectations. A further stress on mills has been the very heavy flow of orders for tin mill black plate, which is being boosted $4 a ton.

The heavy hot-rolled products, though not faring so well as the lighter items, have come in for their share of activity. Soft steel merchant bars, now established at $3 a ton over previous quotations, were particularly in demand, and Valley steel books are comfortably supplied with second quarter bar tonnage. In anticipation of probable advances on some track accessory prices, railroads are figuring more actively on their miscellaneous requirements. Railroad buying has also augmented mill backlogs on plates and small shapes. Alloy bar bookings have also participated in the recent buying spurt.

Wire products are showing more signs of life, with bolt wire and wire nails in excellent demand. Wire fencing is neglected, and merchant wire trade is rather depressed. Pipe mills, lacking the impetus of price advances, are the quietest units among all steel departments. Although demand for oil country goods is holding up, absence of substantial line pipe orders is keeping backlogs very lean. Line pipe projects under discussion are generally not certain to materialize and are expected to re-

"You can always depend on this metallurgically trained organization to supply you with the right steel, at the right time and for the right place. Their stock of cold drawn steels is second to none—while their turned and polished shafting is of the greatest accuracy.

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main indefinite until disposition of the pending securities bill either clears or obstructs the way for financing new projects. Standard pipe tonnage has not reflected the reported improvement in construction.

In the raw materials markets, there is little of import to record. Valley foundries have been more inclined to contract ahead for pig iron in the face of higher prices effective this week. The recent buying wave of scrap, involving more than 40,000 tons, is apparently over, and consumer interest at the moment is at a low point. Scrap shipments, however, are moving more rapidly than they have in many months. If open-hearth operations here are stepped up as sharply as some steel men predict, further scrap buying may be an early possibility. At the present time, however, deliveries are matching open-hearth requirements. Prices for No. 1 heavy melting steel have recently ranged from $14 to $14.50. The latter price ruled on the last purchase and represents the current market. Borings and turnings are quotable at around $10.50, while alloy-free machine shop turnings have been purchased at $12. Coal piles are generally very ample, most large consumers having stocked heavily as assurance against contingencies on April 1.

Ingot mold makers report a scattered improvement in business. Interest in mill equipment is genuinely improved, though no large orders have recently been reported.

## Cast Iron Pipe

**Brookline, Mass.**, has awarded 325 tons of 6 to 16-in. pipe and fittings to Donaldson Iron Co.

**Northampton, Mass.**, has awarded 200 tons of 6 and 12-in. class C, to United States Pipe & Foundry Co.

**Gardner, Mass.**, has placed 150 tons with R. D. Wood & Co.

**Wayland, Mass.**, has purchased 4500 ft. from Warren Pipe & Foundry Corpn.

**Manchester, N. H.**, has awarded 100 tons to R. D. Wood & Co.

**Georgetown, Mass.**, has tentative plans for purchase of seven and a half miles of pipe.

**Cincinnati** has awarded 77,000 ft. of 4 to 12-in. for water mains to United State Pipe & Foundry Co.

**Upper Arlington, Ohio,** will take bids early in May for 11,850 ft. of 8 to 16-in. for water supply, and 300,000-gal. elevated steel tank and tower and water-softening plant. Fund of $140,000 has been arranged through Federal aid. Burgess & Niple, 568 East Broad Street, Columbus, Ohio, are engineers.

**Ashville, Ohio,** will take bids soon for 24,570 ft. of 4 to 6-in. for water lines, including 100,000-gal. elevated steel tank and tower. Cost over $55,000 for complete project. Burgess & Niple, 568 East Broad Street, Columbus, Ohio, are engineers.

**Summit County Board of Commissioners,** Akron, Ohio, plans water pipe line. Fund of $175,000 is being arranged through Federal aid. H. G. Sours is County engineer.

**Danville, Va.**, plans water pipe line in recently annexed city territory. Fund of $85,000 is being arranged.

**Lexington, N. C.**, plans water pipe line from Leonard Creek, in connection with pumping station, etc. Fund of $100,000 has been arranged through Federal aid for entire project.

**Neptune Beach, Fla.**, plans about 3000 ft. of cast iron pipe, 7400 ft. of 2 and 3-in. galvanized pipe, for extensions in water system. Judson L. Burke, Atlantic Beach, Fla., is engineer.

**Olton, Tex.**, plans water pipe line. Fund of $34,000 has been secured through Federal aid for this and other waterworks installation, including pumping station.

**Carlin, Nev.**, plans water pipe line system. Bonds have been authorized for $67,000 to include pumping station. C. F. DeArmond, Elko, Nev., is engineer.

**Chehalis, Wash.**, is arranging special election to vote bonds for $143,000 for water pipe line and other waterworks expansion.

**Roseville, Cal.**, has awarded 216 tons of 6 to 16-in. to United States Pipe & Foundry Co.

**Long Beach, Cal.**, has taken bids on 100 tons of 6 and 8-in.

**Seattle** has taken bids on 150 tons of various sizes.

**Monterey, Cal.**, has rejected bids on 140 tons and will take new bids.

## Pipe Lines

**Camden, N. J.**, section of high-speed approach to Philadelphia-Camden bridge, 220 tons of pipe awarded to National Tube Co.

**Standard Oil Co. of Indiana,** 910 South Michigan Avenue, Chicago, has surveys under way for new welded steel pipe line for crude oil in Messer oil field district, near Edmond, Okla.

**Bureau of Supplies and Accounts,** Navy Department, Washington, asks bids until April 24 for corrosion-resisting steel pipe and tubing (Schedule 2173), f.o.b. works.

**Coral Gables & Suburban Gas Co.,** Coral Gables, Fla., is arranging Federal financing in amount of $316,000, in connection with total fund of about $450,000 for steel pipe line for gas distribution at Coral Gables and vicinity, and artificial gas plant. Charles E. Starr is president.

**Standard Oil Co.,** Jacksonville, Fla., plans steel pipe line in connection with new bulk oil storage and distribution plant at Port Everglades, Fla. Entire project will cost about $100,000.

**Luverne, Minn.**, plans municipal steel pipe line for gas distribution, in connection with artificial gas works. Bond issue of $30,000 is being arranged. C. I. Tenney Engineering Co., Rand Tower Building, Minneapolis, is consulting engineer.

**Southwest Welding & Mfg. Co.,** Los Angeles, submitted low bid to Los Angeles Water & Power Bureau for electric welded steel pipe at $12,853.

## Railroad Equipment

### RAILS

**New York, New Haven & Hartford** has placed 20,000 tons of rails with Bethlehem Steel Co. and 5000 tons with Carnegie Steel Co. Awards of track supplies totaling 10,000 to 15,000 tons have also been made.

**Maine Central** has placed 4200 tons of rails, fastenings, etc., with Bethlehem Steel Co.

**Great Northern** has awarded 5000 tons of rails to Bethlehem Steel Co., 5000 tons to Inland Steel Co. and 10,000 tons to Illinois Steel Co. About 4000 tons of angle bars were divided in proportion to the rails to the above companies. Other track accessories were placed with other producers.

**Baltimore & Ohio** has awarded 15,000 tons of rails to Carnegie Steel Co., 7000 tons to Illinois Steel Co., 3000 tons to Inland Steel Co. and 10,000 tons to Bethlehem Steel Co.

**Pere Marquette** has placed 1050 tons of rails with Inland Steel Co.

**Norfolk & Western** has placed 7500 tons of rails with Carnegie Steel Co. and 2500 tons with Bethlehem Steel Co.

**Chesapeake & Ohio** has purchased 1,044,000 tie plates and the Nickel Plate 185,000, aggregating about 9700 tons. The Chesapeake & Ohio has purchased 2,089,000 screw spikes, amounting to about 1600 tons. Both roads have also placed orders for track spikes and bolts.

**Pere Marquette** has purchased 600 tons of track material.

**The Van Sweringen Roads** have announced the release of 3756 tons of rails for the Nickel Plate and 2850 tons for the Pere Marquette, but some of this rail tonnage, probably all for the Nickel Plate, evidently represents the release of tonnage held up last year.

## Michigan State Foundry Work Course

THE second annual short course in foundry work conducted by the mechanical engineering department of Michigan State College of Agriculture and Applied Science will be held in East Lansing, Mich., on April 19, 20 and 21. The Detroit Foundrymen's Association cooperated in arranging the program and on the evening of April 19 will hold its monthly meeting in connection with the foundry sessions. Among the speakers on the program for the course are Harry Dietert, chief engineer United States Radiator Corpn., Detroit, with a paper on "What the Future Holds for the Cast Iron Industry;" Carl Joseph, metallurgist, Saginaw Malleable Division, General Motors Corpn., on "Cupola Control"; R. G. McElwee, general manager D. J. Ryan Foundry Co., Ecorse, Mich., on "Special Cast Iron Alloys"; H. V. Crawford, General Electric Co., on "The Air and Gases in the Cupola"; Fred Walls, metallurgist Eaton-Erb Foundry Co., Vassar, Mich., on "Cupola Operation"; Charles Morrison, assistant metallurgist Saginaw Malleable Division, General Motors Corpn., on "Electric Furnace and Duplexing"; John Grennan, University of Michigan, on "Cupola Design"; R. E. Aptekar, consulting engineer, Ypsilanti, Mich., on "Refractories"; and Frank Steinebach, managing editor *The Foundry*, on "The Development of Melting Cast Iron."

The latest findings on soil-corrosion of metals are available in paper RP638 of the Bureau of Standards. The pamphlet report, which is obtainable from the Superintendent of Documents, Washington, at 5c. a copy, brings through 1932 the results of studies dating from 1922. The investigations of specimens scrutinized in 1932 do not alter, says the report, the conclusions reached earlier that the character of the soil controls the rates of corrosion. Among the conclusions listed is the statement that a zinc coating weighing 1 oz. per sq. ft. of exposed surface should extend the life of the coated material at least six years in very corrosive soils and much longer under more favorable conditions.

## Reinforcing Steel

### Awards 5200 Tons—New Projects 2050 Tons

**AWARDS**

**Hampton, Mass.,** 360 tons, sea wall, awarded privately.

**Newburyport, Mass.,** 195 tons, State bridge, to Truscon Steel Co.

**Auburn, Mass.,** 100 tons, State road, to Northern Steel Co.

**Morris and Passaic Counties, N. J.,** 500 tons, highway projects, to Kalman Steel Corpn.

**Madison and Trumbull, Conn.,** 350 tons, highway work, to Truscon Steel Co.

**Luzerne County, Pa.,** 220 tons, highway and structures, to Truscon Steel Co.

**Queens, N. Y.,** 180 tons, highway, to Joseph T. Ryerson & Sons, Inc.

**Evanston, Ill.,** 225 tons, water storage tank, to Inland Steel Co.

**Riverdale, Ill.,** 370 tons, highway bridge, to Calumet Steel Co.

**Peru, Ill.,** 145 tons, bridge, to Calumet Steel Co.

**State of Indiana,** 100 tons, paving, to Concrete Steel Co.

**Chicago,** 600 tons, Sanitary District project No. 7, to Truscon Steel Co.

**Seattle,** 1012 tons, Railway Avenue seawall, to Pacific Coast Steel Corpn. and Northwest Steel Rolling Mills Co.

**Sacramento, Cal.,** 216 tons, widening of American River bridge, to Columbia Steel Co.

**Huerfano County, Colo.,** 186 tons, State bridge, to an unnamed bidder.

**Arcadia, Cal.,** 450 tons, racing plant, to Pacific Coast Steel Corpn.

**Los Angeles,** 150 tons, Continental Can Co. addition, to Graham Brothers.

**NEW REINFORCING BAR PROJECTS**

**Camden, N. J.,** 1300 tons, section of high-speed approach to Philadelphia-Camden bridge.

**Fort Peck, Mont.,** 3800 tons, diversion tunnel; combination of Walsh Construction Co. and Silas Mason Co., low bidders.

**San Mateo, Cal.,** 145 tons, race track, bids under advisement.

**Ontario, Ore.,** 600 tons, North Channel structures on Owyhee project, bids under advisement.

## Steel Prices Advanced On Pacific Coast

SAN FRANCISCO, April 17.—Price advances have been filed on steel products for delivery on the Pacific Coast. Soft steel bars have been marked up $3 a ton to 2.45c. a lb., on dock cars Pacific Coast ports. Plates and structural shapes have been advanced $3 a ton to 2.40c. a lb. No. 10 hot-rolled sheets are up $2.50 a ton to 2.55c. a lb. No. 24 hot-rolled annealed sheets have been raised $6 a ton to 3.25c. a lb. No. 10 cold-rolled sheets have been advanced $5 a ton to 3.25c. a lb. No. 20 cold-rolled sheets are up $5 a ton to 3.70c. a lb. No. 24 galvanized sheets have been raised $6 a ton to 3.85c. a lb. Steel sheet piling has been advanced to 2.60c. a lb. Warehouse prices are expected to be marked up in line with the changes in mill prices.

## Seamless Pipe for Structural Purposes

THE following lowest base prices for the products listed, at the basing point therefor, have been filed with the American Iron and Steel Institute:

**Standard Weight, Plain Ends**

| Size | List Price per Ft. | O. D. | Thickness | Weight per Ft. Plain Ends |
|---|---|---|---|---|
| 3 in. | $0.76½ | 3.500 | 0.216 | 7.575 |
| 4 in. | 1.09 | 4.500 | 0.237 | 10.790 |

The list prices shown in the foregoing table are subject to the following schedule of basing discounts:

| Products | Basing Discounts | F.o.b. Basing Point |
|---|---|---|
| 3 in. black (effective April 23) | 68½-5-5% | Pittsburgh |
| 4 in. black (effective April 23) | 71½-5-5% | Pittsburgh |

**Extra Strong, Plain Ends**

| Size | List Price per Ft. | O. D. | Thickness | Weight per Ft. Plain Ends |
|---|---|---|---|---|
| 3 in. | $1.03 | 3.500 | 0.300 | 10.252 |
| 4 in. | 1.50 | 4.500 | 0.337 | 14.983 |

The list prices shown in the foregoing table are subject to the following schedule of basing discounts:

| Products | Basing Discounts | F.o.b. Basing Point |
|---|---|---|
| 3 in. black (effective April 23) | 65½-5-5% | Pittsburgh |
| 4 in. black (effective April 23) | 69 -5-5% | Pittsburgh |

**Double Extra Strong, Plain Ends**

| Size | List Price per Ft. | O. D. | Thickness | Weight per Ft. Plain Ends |
|---|---|---|---|---|
| 4 in. | $2.76 | 4.500 | 0.674 | 27.541 |

The list prices shown in the foregoing table are subject to the following schedule of basing discounts:

| Products | Basing Discounts | F.o.b. Basing Point |
|---|---|---|
| 4 in. black (effective April 23) | 52½-5-5% | Pittsburgh |

The above discounts are subject to a net extra charge of 1½ points and apply to plain-end random length pipe to be sold for direct shipment in carload lots only to manufacturing consumer on direct sale to such consumer, for structural use only.

The pipe sold under this schedule will be stenciled "Structural" and must not be used for the conveyance of gas, steam, liquids or air.

## Corrugated Roofing and Siding 26 in. Wide

THE following lowest base prices for the products listed, at the basing points therefor, which have been filed with the American Iron and Steel Institute:

| Product | Base Price per Square | F.o.b. Basing Point |
|---|---|---|
| Galvanized (effective April 22): | | |
| No. 29 gage | $3.23 | Birmingham |
| No. 28 gage | 3.31 | Birmingham |
| No. 26 gage | 3.62 | Birmingham |
| No. 24 gage | 4.31 | Birmingham |
| No. 22 gage | 5.13 | Birmingham |
| No. 20 gage | 5.96 | Birmingham |
| No. 18 gage | 7.65 | Birmingham |
| No. 16 gage | 9.15 | Birmingham |
| (Effective April 23): | | |
| No. 29 gage | 3.58 | Pacific Coast Ports |
| No. 28 gage | 3.69 | Pacific Coast Ports |
| No. 26 gage | 4.06 | Pacific Coast Ports |
| No. 24 gage | 4.87 | Pacific Coast Ports |
| No. 22 gage | 5.81 | Pacific Coast Ports |
| No. 20 gage | 6.76 | Pacific Coast Ports |
| No. 18 gage | 8.70 | Pacific Coast Ports |
| No. 16 gage | 10.43 | Pacific Coast Ports |
| Painted (effective April 26): | | |
| No. 28 gage | 2.17 | Pittsburgh |
| No. 26 gage | 2.50 | Pittsburgh |
| No. 24 gage | 3.16 | Pittsburgh |
| No. 22 gage | 3.87 | Pittsburgh |
| No. 20 gage | 4.56 | Pittsburgh |
| No. 18 gage | 5.83 | Pittsburgh |
| (Effective April 23): | | |
| No. 28 gage | 2.58 | Pacific Coast Ports |
| No. 26 gage | 2.99 | Pacific Coast Ports |
| No. 24 gage | 3.81 | Pacific Coast Ports |
| No. 22 gage | 4.69 | Pacific Coast Ports |
| No. 20 gage | 5.54 | Pacific Coast Ports |
| No. 18 gage | 7.12 | Pacific Coast Ports |


NON-SHRINK, OIL HARDENING

TOOL STEEL TUBING

The job of making ring dies, cutting dies, bushings spacers, etc., is half done when you start with Bissett Tool Steel Tubing. There is a size carried in stock to meet every requirement up to 12" O.D. and 2" wall thickness. Larger sizes can be supplied.

It eliminates forging, does away with annealing difficulties and cuts down machining cost.

We also supply special tubing to S.A.E. 52100 and S.A.E. 4615 analysis for Ball Bearing purposes.

*Manufacturers of BISCO Tungsten Carbide and Tantalum Carbide drawing dies for wire, rod and tubing.*

THE BISSETT STEEL CO., INC.

945 E. 67th STREET, CLEVELAND, O.

Cincinnati Worcester Buffalo

# OBITUARY

OSKAR VON MILLER, founder and first director of the Deutsches Museum at Munich, Germany, died in that city April 9, aged 78 years. Though an engineer with some notable power development work to his credit while still a young man, it is as organizer of the world famous institution at Munich that his memory will long be honored. His conception was of exhibits that in many cases could be put into motion at the will of the visitor and of displays that pictured the evolution in pure and applied science in a highly entertaining as well as educational manner. The result achieved is an unfolding of technology on a par with the presentation of the theater, and as an attraction it has brought to its doors voluntarily unbelievably large numbers of the German people and countless tourists from all over the world. The scope and extent of the museum is measured by its nine miles of mechanical exhibits and its 400 rooms and halls spread over 10 acres. Doctor von Miller was the recipient of many honors, included among them honorary membership in the American Society of Mechanical Engineers, bestowed in 1912, and on his last visit to the United States, in 1925, he addressed many conferences of Americans who desired his advice in patterning American institutions after his Munich creation.

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WILLIAM MICHAEL HOKE, vice-president and treasurer of the Connors Steel Co., Birmingham, died April 4, aged 67 years. He had been associated with the company for more than 30 years.

❖ ❖ ❖

ALFRED J. JUPP, a vice-president of the Lunkenheimer Co., Cincinnati, died suddenly on April 10, in New York, while on a business trip. He was 60 years old. A native of Cincinnati, Mr. Jupp entered the employ of the valve company when he was a young man. From 1896 to 1913, he was the New York representative of the Lunkenheimer Co., and shortly after returning to Cincinnati in 1913, he became a vice-president.

❖ ❖ ❖

PATRICK H. LEEN, president and treasurer of the Fewless-Leen Brass & Iron Co., died at his home in Cincinnati, on April 8, aged 73 years. He had been an official of the foundry for more than 32 years.

❖ ❖ ❖

RAYMOND C. SUCKLING, vice-president and secretary-treasurer, Standard Steel Spring Co., Coraopolis, Pa., died on April 11, after a four months' illness. He was born in Verona, Pa., in 1890, and attended local public schools. In his early business career he was connected with the Westinghouse Electric & Mfg. Co., and in 1915, he became secretary and assistant treasurer of the Standard Steel Spring Co., later becoming vice-president.

❖ ❖ ❖

ROBERT S. PREBLE, vice-president, Walker Mfg. Co. and Ajax Auto Parts Co., Racine, Wis., died April 4, after a brief illness. For the past eight years he had been stationed in Detroit, Mich., as general representative.

❖ ❖ ❖

LUTHER L. KNOX, one of the founders of the Blaw-Knox Co., Blawnox, Pa., died at his home at Pittsburgh, on April 6, aged 63 years. He had severed his connections with the Blaw-Knox company several years ago, and until recently had been associated with the Pressed Steel Car Co., Pittsburgh.

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THOMAS B. SUMNER, pioneer industrialist of Everett, Wash., and president of the Sumner Iron Works, of the same city, and Canadian Sumner Iron Works, died at his home recently, at the age of 80 years. He had been an active member of the United Metal Trades Association for the past 30 years.

## Scrap Iron and Steel Code Committees Announced

BENJAMIN SCHWARTZ, director general of the Institute of Scrap Iron and Steel, was elected chairman of the Code Authority for the scrap iron and steel trade, at the first organization meeting of the Code Authority held in New York, April 14 to 16, under the code for the industry, signed by President Roosevelt on March 12. After many attempts had been made to organize the scrap iron dealers of the country, Mr. Schwartz in 1928 succeeded in organizing the industry in the Institute of Scrap Iron and Steel, which at present has a membership of about 500 firms, representing over 90 per cent of the tonnage sold to the steel industry. Mr. Schwartz attended Cornell University, and as a lawyer, editor, trained organizer and public speaker, has brought to the industry qualities which have proved helpful in gaining for it proper recognition.

With Dr. N. I. Stone, administrative representative, O. J. Libert, deputy administrator, and 15 representatives of the industry present, the Code Authority adopted by-laws, established a machinery for local control boards, discussed the inter-code relations between the steel industry and the scrap iron and steel trade, and elected the following additional officers: vice-chairman, Darwin Luntz, of Luntz Iron & Steel Co., Canton, Ohio; secretary-treasurer, Dan R. Cohen, of D. R. & F. A. Cohen, Chicago.

The executive committee, of which Mr. Schwartz will be chairman, consists of the following: Joel Claster, of Luria Brothers & Co., Inc., Reading, Pa.; Darwin Luntz, M. V. Bonomo, of Schiavone-Bonomo Corpn., New York; D. R. Cohen; Ben P. Williams, of Hickman, Williams & Co., St. Louis; N. Katz, of Jacob A. Katz & Sons, Hartford, Conn.

The chairman announced the appointment of the following standing committees, as provided in the by-laws: committee on trade practices and inter-code relations: Joel Claster, chairman; Darwin Luntz; Charles Dreifus, of Charles Dreifus Co., Pittsburgh; M. Schapiro, of Boston Iron & Metal Co., Baltimore, and N. Katz. Committee on compliance, exceptions and interpretations: M. V. Bonomo, chairman; D. R. Cohen; Joseph V. Kiley, of T. J. Kiley & Son, Boston; Samuel J. Appel, of Samuel Appel Co., Fort Wayne, Ind.; Saul Brown, of M. Brown & Son Co., Pittsburgh. Committee on finance and statistics: Ben P. Williams, chairman; H. Goldberg, of Goldberg Iron & Steel Co., Columbus; Dan Roblin, of Buffalo Housewrecking & Salvage Co., Buffalo; P. W. Bowers of P. W. Bowers & Co., New York, and David Feinberg, of David Feinberg & Co., Medford, Mass.

## Canadian Mills Book Export Business

TORONTO, ONT., April 17.—Export sales of steel are improving. Dominion Steel Corpn., Sydney, N. S., has received orders for 24,000 tons of soft steel products for export to Britain and New Zealand.

This new business is in addition to rail orders received some time ago from the Canadian National and Canadian Pacific railroads. It is stated that the working force at the Sydney plant now is around 2200 persons, the largest payroll in recent years.

The automotive industry is furnishing a good demand for steel products, and heavy buying of equipment and steel is reported from the various mining centers.

Pig iron demand is improving, but sales are entirely for spot delivery. Foundry melt is holding around 40 per cent. Pig iron production is down, with one furnace blowing and one banked. Pig iron prices are firm and unchanged.

Trading in iron and steel scrap is specialized, with only a few lines moving. Price lists are unchanged.

# Demands for Metals Decline Sharply But Prices Remain Unchanged and Firm

## No Copper Is Available Under 8.50c.—Fair Volume of Lead Sales at 4.10c.—Spelter Bookings Drop to 2700 Tons

NEW YORK, April 17.—The electrolytic copper market is practically static as compared with the impressive transactions of last week which were forced in by the sharp upward march of prices. There is very little inquiry in the current market, and trading is confined to carlots of prompt metal. Nevertheless, all selling interests are firmly maintaining offerings at 8.50c., delivered Connecticut points, and it is doubtful that this price will be shaded by anyone prior to final code adoption. The approved code is expected to be operative within a week, after which it is believed that short upward movements will eventually carry the metal to an unofficial minimum level of 9c. The inactivity here has exerted a sympathetic influence abroad, and selling there has also been dull for the past few days. Several small tonnages were traded this morning at a cent price equivalent to 8.40c. a lb., c.i.f. Hamburg, Liverpool, and Havre.

Domestic copper consumption during March is estimated at about 42,500 tons, and foreign at 84,500 tons. Total visible world stocks dropped 22,500 tons in March. Domestic refinery supplies now stand about 17,500 tons lower at 494,000 tons, and foreign stocks 5000 tons lower at 97,000 tons.

### Tin

Consumers and dealers are well booked, and the market is enlivened only by occasional carlot transactions. Straits tin was available this morning at 55.50c. a lb., New York, and English refined was nominally offered 2½ points lower. London postings on first call today were about £2 under the price a week earlier, with spot and future standard listed at £238 5s. and £236 15s. respectively, and Straits in the Far East at £239 17s. 6d. In England the market is temporarily somewhat soft, but the statistical position continues to improve. The International Tin Committee is unofficially sponsoring a buffer pool, but in general, the trade is opposed to the proposal, believing that it is an instrument making for higher market prices. At present the really important question before the committee is whether increases in output rates will be permitted, and, if permitted, whether they will offset the declining trend in visible world supplies.

### Zinc

After the comparatively heavy purchases announced last week, sellers again report a disinterested consumer attitude. Although this market is still dominated by buyers, prompt prices are being held firmly in all directions. June metal is easily available on the spot 4.40c., East St. Louis, basis. Smelters have experienced no relief from the Joplin area as all grades of concentrates have strengthened at $29 to $30 a ton; therefore an effort will probably be made to keep Prime Western from weakening at 4.40c. Spelter bookings for the seven-day period aggregated 2700 tons, at prices ranging from 4.30c. to 4.40c., depending on the delivery position, as compared with 9500 tons in the preceding period, and 1500 tons sold two weeks ago. Tri-State ore production totaled about 6100 tons last week, whereas sales and shipments amounted to 4500 tons and 6350 tons respectively. Visible stocks at the close of the week were estimated at 15,050 tons. According to revised statistics, principal producers delivered 5218 tons of Prime Western in March at a weighted average price of 4.377c. a lb., which compares with 4547 tons in February and 5615 tons in January. During March, 3435 tons was sold forward at 4.379c. a lb., against 9141 tons in February and 14,095 tons in January.

### Lead

The current market is more quiet following the heavy volume of business done in the two preceding weeks. Nevertheless, prices are steady to firm at 4.25c. a lb., New York, and 4.10c., St. Louis, in view of the comfortably booked position of all important sellers and on the strength of a moderate but diverse day-by-day demand from consumers. The recent price increases aggregating $4 a ton were a direct result of the sharp buying wave influenced by the strong tone of the copper market. Now that the activity has subsided considerably, there is little expectation of additional price advances. Total orders now booked for April shipment amount to over 29,000 tons, and 14,000 to 15,000 tons has been sold for May delivery. Inasmuch as additional April business is available for two more weeks, it is expected that that month will be the most satisfactory since the turn of the year.

**The Week's Prices. Cents Per Pound for Early Delivery**

| | April 11 | April 12 | April 13 | April 14 | April 16 | April 17 |
|---|---|---|---|---|---|---|
| Electrolytic copper, N. Y.* | 8.25 | 8.25 | 8.25 | 8.25 | 8.25 | 8.25 |
| Lake copper, N. Y. | 8.50 | 8.50 | 8.50 | 8.50 | 8.50 | 8.50 |
| Straits tin, Spot, N. Y. | 55.75 | 55.70 | 55.50 | .... | 55.25 | 55.50 |
| Zinc, East St. Louis | 4.40 | 4.40 | 4.40 | 4.40 | 4.40 | 4.40 |
| Zinc, New York | 4.75 | 4.75 | 4.75 | 4.75 | 4.75 | 4.75 |
| Lead, St. Louis | 4.10 | 4.10 | 4.10 | 4.10 | 4.10 | 4.10 |
| Lead, New York | 4.25 | 4.25 | 4.25 | 4.25 | 4.25 | 4.25 |

*Refinery quotations; price ¼c. higher delivered in Connecticut.

Aluminum, 98-99 per cent, 22.90c. a lb. delivered.
Aluminum, remelt No. 12 (alloy), carload lots delivered, 16c. a lb., average for week.
Nickel electrolytic cathode, 35c. a lb., delivered; shot and ingot, 36c. a lb., delivered.
Antimony, 7.95c. a lb., New York.
Brass ingots, 85-5-5-5, 8.75c. a lb., New York and Philadelphia.

**From New York Warehouse**

*Delivered Prices, Base per Lb.*

| | |
|---|---|
| Tin, Straits pig | 57.00c. to 58.00c. |
| Tin, bar | 59.00c. to 60.00c. |
| Copper, Lake | 9.75c. to 10.50c. |
| Copper, electrolytic | 9.50c. to 10.00c. |
| Copper, castings | 9.25c. to 10.25c. |
| *Copper sheets, hot-rolled | 15.50c. |
| *High brass sheets | 14.25c. |
| *Seamless brass tubes | 16.75c. |
| *Seamless copper tubes | 16.75c. |
| *Brass rods | 12.75c. |
| Zinc, slabs | 5.75c. to 6.75c. |
| Zinc sheets (No. 9), casks, 1200 lb. and over | 10.25c. |
| Lead, American pig | 5.00c. to 6.00c. |
| Lead, bar | 6.00c. to 7.00c. |
| Lead, sheets | 8.00c. |
| Antimony, Asiatic | 9.25c. |
| Alum., virgin, 99 per cent, plus | 23.30c. |
| Alum., No. 1 for remelting, 98 to 99 per cent | 18.00c. to 19.00c. |
| Solder, ½ and ½ | 33.00c. to 34.00c. |
| Babbitt metal, commercial grades | 25.00c. to 60.00c. |

*These prices are also for delivery from Chicago and Cleveland warehouses.

**From Cleveland Warehouse**

*Delivered Prices per Lb.*

| | |
|---|---|
| Tin, Straits pig | 58.75c. |
| Tin, bar | 60.75c. |
| Copper, Lake | 9.50c. |
| Copper, electrolytic | 9.50c. |
| Copper, castings | 9.25c. |
| Zinc, slab | 5.75c. to 6.00c. |
| Lead, American pig | 5.10c. to 5.35c. |
| Lead, bar | 8.00c. |
| Antimony, Asiatic | 9.00c. |
| Babbitt metal, medium grade | 19.50c. |
| Babbitt metal, high grade | 63.00c. |
| Solder, ½ and ½ | 35.50c. |

**Old Metals, Per Lb., New York**

*Buying prices are paid by dealers for miscellaneous lots from smaller accumulators, and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)*

| | Dealers' Buying Prices | Dealers' Selling Prices |
|---|---|---|
| Copper, hvy. crucible | 6.75c. | 7.50c. |
| Copper, hvy. and wire | 6.50c. | 7.25c. |
| Copper, light and bottoms | 5.50c. | 6.50c. |
| Brass, heavy | 3.62½c. | 4.37½c. |
| Brass, light | 3.12½c. | 3.75c. |
| Hvy. machine composition | 5.25c. | 6.125c. |
| No. 1 yel. brass turnings | 4.50c. | 5.25c. |
| No. 1 red brass or compos. turnings | 4.37½c. | 5.37½c. |
| Lead, heavy | 3.25c. | 3.75c. |
| Zinc | 2.50c. | 3.125c. |
| Cast aluminum | 10.00c. | 11.75c. |
| Sheet aluminum | 12.25c. | 13.50c. |

# Fabricated Structural Steel

## Awards Higher—New Projects Again Lower

WITH the exception of 2400 tons for a section of the approach to the Camden-Philadelphia bridge, lettings were in small lots, totaling 13,650 tons compared with 12,160 tons a week ago. New projects of 12,160 tons compare with 13,700 tons in the previous week and 18,300 tons two weeks ago. Included in new jobs are 1500 tons for a bridge at Palmyra, N. Y., for the New York Central Railroad and 1400 tons for a railroad bridge at Delta Point, La. Plate awards total about 3650 tons and new plate inquiries call for 15,465 tons, the bulk of which is for municipal gas plants. Lettings of sheet steel piling aggregate 2175 tons. Structural steel awards for the week follow:

### NORTH ATLANTIC STATES

**Holyoke, Mass.,** 340 tons, post office, to G. Haarman & Co., Holyoke; previously reported to an unnamed bidder.

**Rochester, N. Y.,** 280 tons, grandstand CWA project, to Leach Steel Corpn.

**Rochester,** 630 tons, John Marshall school, to F. L. Heughes & Co.

**Cowanda, N. Y.,** 100 tons, coal trestle for State hospital, to McClintic-Marshall Corpn.

**Putnam County, N. Y.,** 195 tons, highway bridge, to McClintic-Marshall Corpn.

**Skillman, N. J.,** 190 tons, State hospital building, to Bethlehem Fabricators, Inc.

**Trenton, N. J.,** 220 tons, State tuberculosis building, to McClintic-Marshall Corpn.

**Camden, N. J.,** 2400 tons, section of high-speed approach to Philadelphia-Camden bridge, to American Bridge Co.

**Camden,** 1700 tons of sheet steel piling, section of high-speed approach to Philadelphia-Camden bridge, to Carnegie Steel Co.

**Philadelphia,** 350 tons, Temple University library building, to Bethlehem Fabricators, Inc.

**Philadelphia,** 200 tons, Chestnut Street store, to Morris Wheeler & Co.

**Philadelphia,** 170 tons, crane runway, to Frank M. Weaver & Co., Inc.

**State of Maryland,** 270 tons, Patuxent River bridge, to American Bridge Co.

**Washington,** 660 tons, Woodrow Wilson High School, to Lehigh Structural Steel Co.

**Washington,** 850 tons, Anacostia River bridge for Pennsylvania Railroad, to McClintic-Marshall Corpn.

**Washington,** 475 tons of steel piling at Bolling Field for Navy, to Kalman Steel Corpn.

**Forest County, Pa.,** 1750 tons, bridge over Allegheny River, Route 750, to Phoenix Bridge Co.

**Jersey City, N. J.,** 140 tons, bridge, Central Railroad of New Jersey, to Phoenix Bridge Co.

### SOUTH AND SOUTHWEST

**Culpeper, Va.,** 170 tons, State highway bridge, to Virginia Bridge & Iron Co.

**Norfolk, Va.,** 575 tons, bridge, to Wisconsin Bridge & Iron Co.

**Sheffield, Ala.,** 610 tons, TVA nitrate plant, to Bethlehem Fabricators, Inc.

**Jefferson County, Ark.,** 450 tons, highway bridge, to Virginia Bridge & Iron Co., Inc.

### CENTRAL STATES

**Meredosia, Ill.,** 335 tons, State highway bridge, to Illinois Steel Bridge Co.

**Orchard Place, Ill.,** 160 tons, State highway bridge, to McClintic-Marshall Corpn.

**Summit, Ill.,** 160 tons, State highway bridge, to Wendnagel & Co.

**Madison, Wis.,** 670 tons, State highway bridge, to McClintic-Marshall Corpn.

**Prairie du Sac, Wis.,** 200 tons, sheet piling for bridge protection, to Wisconsin Bridge & Iron Co.

**Cherokee County, Iowa,** 220 tons, beam spans, to Pittsburgh-Des Moines Steel Co.

**Cherokee County, Iowa,** 100 tons, beam spans, to Des Moines Steel Co.

**Ida County, Iowa,** 165 tons, two beam bridges, to Pittsburgh-Des Moines Steel Co.

**Jefferson County, Iowa,** 145 tons, three beam spans, to Clinton Bridge Works.

**Lancaster County, Neb.,** 120 tons, beam spans, to Omaha Steel Works.

### WESTERN STATES

**Walsenburg, Colo.,** 280 tons, State highway bridge, to Minneapolis-Moline Power Implement Co.

**Hot Sulphur Springs, Colo.,** 240 tons, State highway bridge, to Midwest Steel & Iron Works.

**State of California,** 150 tons, lookout towers for United States Forest Service, to Pacific Coast Steel Co.

**Uinta County, Wyo.,** 119 tons, railroad underpass for State, to an unnamed bidder.

**Glasgow, Mont.,** 100 tons, dredge cranes, to Marietta Mfg. Co.

**El Segundo, Cal.,** 100 tons, buildings, to Consolidated Steel Corpn.

**State of Colorado,** 327 tons, bridges in two counties, to unnamed bidders.

## NEW STRUCTURAL STEEL PROJECTS

### NORTH ATLANTIC STATES

**New York Central,** 1500 tons, bridge at Palmyra, N. Y.

**New York,** 3000 tons of sheet steel piling, dock for the Socony-Vacuum Co.

**Big Flats, N. Y.,** 400 tons, State highway bridge.

**Ocean City, N. J.,** 350 tons, school building.

**Jersey City, N. J.,** 150 tons, American Railway Express Co. building.

**Brady's Bend, Pa.,** 380 tons, reconstruction of highway bridge.

**Clarion County, Pa.,** 400 tons, highway bridge; bids April 20.

**Ellwood City, Pa.,** 100 tons, Lincoln high school.

### SOUTH AND SOUTHWEST

**Bracey, Va.,** 450 tons, bridge.

**State of Georgia,** 770 tons, five State highway bridges.

**Delta Point, La.,** 1400 tons, railroad bridge.

**Seminole, Okla.,** 250 tons, bridge.

**Tucson, Ariz.,** 156 tons, State undercrossing, bids under advisement.

### CENTRAL STATES

**Willoughby, Ohio,** 250 tons, bridge for Nickel Plate Railroad.

**East Chicago, Ind.,** 250 tons, Grasselli Chemical Co. building.

**State of Indiana,** 300 tons, highway bridges at Hebron and St. John.

**Muncie, Ind.,** 250 tons, bridge.

**State of Michigan,** 190 tons, highway bridges at Evart and Imlay.

**Republic, Mich.,** 150 tons; A. H. Proksch, Iron River, Mich., low bidder on general contract.

**State of Iowa,** 680 tons, five bridges.

**Spring Valley, Ill.,** 1400 tons, bridge. McClintic-Marshall Corpn. low bidder.

**State of Illinois,** 900 tons, three grade separation projects.

**Milwaukee Road,** 300 tons, bridge.

**Lead, S. D.,** 500 tons, bridge.

### WESTERN STATES

**Pocatello, Idaho,** 600 tons, viaduct.

**Boulder Dam, Nev.,** 7000 tons, power house; American Bridge Co. low bidder.

**Worland, Wyo.,** 400 tons, State highway bridge.

**Fort Peck, Mont.,** 2946 tons, tunnels, Silas Mason Co., low bidder.

**Southern Pacific Railroad,** 240 tons, bridge at Sacramento, Cal.

**Alhambra, Cal.,** 250 tons, post office.

**San Mateo, Cal.,** 700 tons, grandstand.

## FABRICATED PLATE

### AWARDS

**Mt. Morris, N. Y.,** 135 tons, elevated water tank, to Pittsburgh-Des Moines Steel Co.

**Petrolia, Pa.,** 125 tons, oil tanks, to Warren City Tank & Boiler Co.

**Philadelphia,** 215 tons, two tanks for Gulf Refining Co., to Chicago Bridge & Iron Works.

**Pittsburgh,** 205 tons, four tanks for Gulf Refining Co., to Pittsburgh Bridge & Iron Co.

**Washington,** 335 tons, 51 gas buoys, awarded by superintendent of lighthouses, to four fabricators.

**Memphis, Tenn.,** 1530 tons, dredge pontoons and pipes for Government, to St. Louis Car Co.

**St. Louis,** 175 tons, 74 welded tanks, to Standard Steel Works.

**Glasgow, Mont.,** 725 tons, dredge pipe, to Marietta Mfg. Co.

**Fort Peck, Mont.,** 200 tons, pipe line, to Joseph Greenspons & Son Pipe Corpn. and Republic Steel Corpn.

### NEW PROJECTS

**Holyoke, Mass.,** 1100 tons, municipal gas tank.

**Worcester, Mass.,** 200 tons, State hospital standpipe.

**New Haven, Conn.,** 4200 tons, gas holder.

**Waterbury, Conn.,** 2500 tons, gas holder.

**Meridan, Conn.,** 1600 tons, gas holder.

**Columbus, Ohio,** 600 tons, gas holder.

**Cincinnati,** 4200 tons, gas holder.

**Terre Haute, Ind.,** 600 tons, gas holder.

**Milwaukee,** unstated tonnage, 1,500,000-gal. bulk storage capacity for Barnsdall Refineries, Inc., Milwaukee; bids soon.

**Oakland, Cal.,** 225 tons, tunnel lining.

**Sunnyvale, Cal.,** 100 tons, two locomotives for Navy Air Base, bids under advisement.

**Logan Utah,** 140 tons sheets, pipe line at State Agricultural College, bids under advisement.

# Price Advances Not Yet Officially Effective on All Products

WHILE higher prices for pig iron and steel are being adopted generally throughout the industry, uniformity of quotations is being achieved slowly. Under the code of fair competition a new price cannot be assumed to have become entirely effective until all makers ordinarily selling specific products on the various established basing points have filed their new figures with the American Iron and Steel Institute. It would be possible for a mill to file a higher price on some product and immediately refuse to sell at any other figure, but technically there would be nothing to prevent such a producer from quoting its previous selling figure for 10 days.

Under the circumstances, in order to conform with its established practice of quoting prices which are generally effective on its press date, THE IRON AGE has marked up only those prices which had been filed with the institute by all producers ordinarily selling on the established basing points at least 10 days prior to April 17.

The following table includes all price advances for which final effective dates have been determined:

| Products | Base Price per Lb. | F.o.b. Basing Point |
|---|---|---|
| Bars, rail steel (For merchant trade) (effective April 12) | 1.85c. | Cleveland |
| (Effective April 16) | 1.85c. | Gary |
| (Effective April 17) | 1.90c. | Buffalo |
| (Effective April 22) | 2.35c. | Pacific Coast Ports |
| Plates (effective April 22) | 2.00c. | Birmingham |
| (Effective April 23) | 1.95c. | Coatesville |
| (Effective April 16) | 1.95c. | Sparrows Point |
| Floor plates (effective April 17) | 3.35c. | Pittsburgh |
| (Effective April 19) | 3.40c. | Chicago |
| (Effective April 23) | 3.45c. | Coatesville |
| (Effective April 23) | 3.75c. | Gulf Ports |
| (Effective April 23) | 3.90c. | Pacific Ports |
| Structural shapes (effective April 26) | 1.85c. | Pittsburgh |
| (Effective April 22) | 2.00c. | Birmingham |
| (Effective April 15) | 1.95c. | Buffalo |
| (Effective April 21) | 1.95c. | Bethlehem |
| Sheet steel piling (effective April 16) | 2.15c. | Pittsburgh |
| (Effective April 17) | 2.25c. | Chicago |
| (Effective April 15) | 2.25c. | Buffalo |
| (Effective April 17) | 2.60c. | Gulf Ports |
| (Effective April 17) | 2.60c. | Pacific Ports |
| No. 10 hot-rolled sheets (effective April 27) | 2.10c. | Gary |
| (Effective April 22) | 2.15c. | Birmingham |
| No. 24 hot-rolled sheets (effective April 27) | 2.75c. | Gary |
| (Effective April 22) | 2.80c. | Birmingham |
| No. 24 hot-rolled, pickled in the breakdown sheets (effective April 27) | 3.25c. | Gary |
| No. 10 heavy cold-rolled sheets (effective April 27) | 2.65c. | Gary |
| No. 10 heavy cold-rolled sheets (mill run) (effective April 26) | 2.45c. | Pittsburgh |
| (Effective April 27) | 2.55c. | Gary |
| No. 20 light cold-rolled sheets (effective April 27) | 3.25c. | Gary |
| No. 20 light cold-rolled sheets (mill run) (effective April 27) | 3.15c. | Gary |
| No. 24 galvanized sheets (effective April 26) | 3.25c. | Pittsburgh |
| (Effective April 22) | 3.40c. | Birmingham |

| Products | Base Price per 100 Lb. | F.o.b. Basing Point |
|---|---|---|
| Bright wire (effective April 23) | $2.45 | Birmingham |
| **Base Price per 100 Lb. Keg** | | |
| Wire nails (effective April 23) | $2.75 | Birmingham |
| **Base Price per 100 Lb.** | | |
| Smooth annealed wire (effective April 23) | $2.60 | Birmingham |
| Smooth galvanized wire (effective April 23) | 2.95 | Birmingham |
| Polished staples (effective April 23) | 3.45 | Birmingham |
| Galvanized staples (effective April 23) | 3.70 | Birmingham |
| Barbed wire, galv. (effective April 23) | 3.15 | Birmingham |
| **Base Price Per Net Ton** | | |
| Woven wire fence, base column (effective April 23) | $67.25 | Birmingham |
| Bale ties (effective April 23) | 66.00 | Birmingham |
| **Base Price Per Gross Ton** | | |
| Light rails (lighter than 60 lb.) (effective April 21) | $35.00 | Pittsburgh |
| (Effective April 19) | 35.00 | Chicago |
| (Effective April 26) | 35.00 | Birmingham |
| Billets, blooms and slabs—rerolling (effective April 19) | 29.00 | Gary |
| (Effective April 22) | 29.00 | Birmingham |
| Billets, blooms and slabs—forging quality (effective April 16) | 34.00 | Youngstown |
| (Effective April 14) | 34.00 | Gary |
| (Effective April 20) | 34.00 | Birmingham |
| Sheet bars (effective April 21) | 30.00 | Canton, O. |
| (Effective April 14) | 30.00 | Sparrows Point |
| **Base Price Per Lb.** | | |
| Skelp (effective April 16) | 1.70c. | Chicago |
| (Effective April 14) | 1.70c. | Buffalo |
| (Effective April 23) | 1.70c. | Coatesville |
| (Effective April 14) | 1.70c. | Sparrows Point |
| **Base Price Per Gross Ton** | | |
| Wire rods (effective April 24) | $41.00 | Birmingham |
| Carbon steel forging ingots (effective April 19) | 31.00 | Pittsburgh |
| (Effective April 16) | 31.00 | Youngstown |
| (Effective April 16) | 31.00 | Chicago |
| (Effective April 14) | 31.00 | Gary |
| No. 2 foundry iron (effective April 22) | 19.50 | Everett, Mass. |
| (Effective April 19) | 19.50 | Bethlehem |
| (Effective April 20) | 19.50 | Birdsboro |
| (Effective April 20) | 19.50 | Swedeland |
| (Effective April 19) | 19.50 | Sparrows Point |
| (Effective April 17) | 18.50 | Sharpsville |
| (Effective April 19) | 18.50 | Youngstown |
| (Effective April 17) | 18.50 | Erie |
| (Effective April 16) | 18.50 | Cleveland |

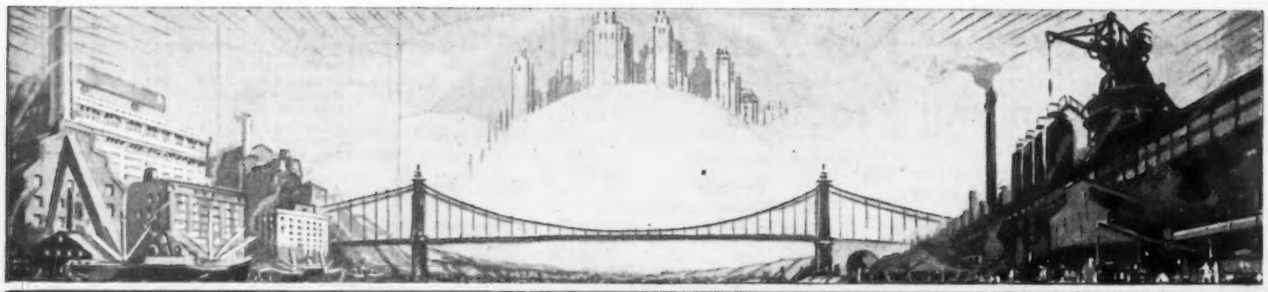
| Products | Base Price per Gross Ton | F.o.b. Basing Point |
|---|---|---|
| (Effective April 17) | 18.50 | Toledo |
| (Effective April 19) | 18.50 | Detroit |
| (Effective April 23) | 18.50 | Hamilton |
| (Effective April 16) | 20.25 | Jackson |
| (Effective April 20) | 18.50 | Chicago |
| (Effective April 17) | 19.00 | Duluth |
| (Effective April 21) | 14.50 | Birmingham |
| (Effective April 26) | 17.50 | Provo |
| Malleable pig iron | | |
| (Effective April 22) | 20.00 | Everett |
| (Effective April 19) | 20.00 | Bethlehem |
| (Effective April 20) | 20.00 | Birdsboro |
| (Effective April 20) | 20.00 | Swedeland |
| (Effective April 23) | 18.50 | Neville Is. |
| (Effective April 17) | 18.50 | Sharpsville |
| (Effective April 19) | 18.50 | Youngstown |
| (Effective April 20) | 19.00 | Buffalo |
| (Effective April 17) | 19.00 | Erie |
| (Effective April 16) | 18.50 | Cleveland |
| (Effective April 17) | 18.50 | Toledo |
| (Effective April 19) | 18.50 | Detroit |
| (Effective April 23) | 18.50 | Hamilton |
| (Effective April 20) | 18.50 | Chicago |
| (Effective April 17) | 19.00 | Duluth |
| (Effective April 16) | 20.25 | Jackson |
| Basic pig iron | | |
| (Effective April 22) | 19.00 | Everett |
| (Effective April 19) | 19.00 | Bethlehem |
| (Effective April 20) | 19.00 | Birdsboro |
| (Effective April 20) | 19.00 | Swedeland |
| (Effective April 19) | 19.00 | Sparrows Point |
| (Effective April 26) | 18.00 | Neville Is. |
| (Effective April 17) | 18.00 | Sharpsville |
| (Effective April 19) | 18.00 | Youngstown |
| (Effective April 20) | 17.50 | Buffalo |
| (Effective April 17) | 18.00 | Erie |
| (Effective April 16) | 18.00 | Cleveland |
| (Effective April 17) | 18.00 | Toledo |
| (Effective April 19) | 18.00 | Detroit |
| (Effective April 20) | 18.00 | Chicago |
| (Effective April 21) | 13.50 | Birmingham |
| (Effective April 16) | 19.75 | Jackson |
| Bessemer pig iron | | |
| (Effective April 22) | 20.50 | Everett |
| (Effective April 19) | 20.50 | Bethlehem |
| (Effective April 20) | 20.50 | Birdsboro |
| (Effective April 20) | 20.50 | Swedeland |
| (Effective April 23) | 19.00 | Neville Is. |
| (Effective April 17) | 19.00 | Sharpsville |
| (Effective April 19) | 19.00 | Youngstown |
| (Effective April 20) | 19.50 | Buffalo |
| (Effective April 17) | 19.50 | Erie |
| (Effective April 20) | 19.00 | Cleveland |
| (Effective April 17) | 19.00 | Toledo |
| (Effective April 19) | 19.00 | Detroit |
| (Effective April 23) | 19.00 | Hamilton |
| (Effective April 20) | 19.00 | Chicago |
| (Effective April 17) | 19.50 | Duluth |
| (Effective April 21) | 19.00 | Birmingham |
| Low phosphorus pig iron | | |
| (Effective April 21) | 23.50 | Standish, N. Y. |
| (Effective April 20) | 23.50 | Steelton, Pa. |

# Waste Heat Boiler Performance

THE accompanying tabulation covers records of heat utilization of a waste heat boiler used in connection with an open-hearth furnace. The data were contributed by R. D. Abbiss, assistant chief engineer, Edgar Thomson Works, Carnegie Steel Co., Braddock, Pa., to the American Society of Mechanical Engineers.

| Number of Test Heat | I | II | III | IV | V |
|---|---|---|---|---|---|
| Time of heat, hr. | 8.5 | 8.6 | 8.0 | 8.3 | 10.1 |
| Mean velocity of gases through boiler, standard conditions, ft. per sec. | 19.6 | 24.2 | 25.8 | 23.2 | 26.0 |
| Mean temperature of gases, deg. F. | 655 | 818 | 766 | 790 | 928 |
| Heat output from boiler, millions of B.t.u. | 79.40 | 135.14 | 131.31 | 112.78 | 201.90 |
| Mean temperature difference, deg. F. | 335 | 509 | 440 | 474 | 616 |
| B.t.u. per hr. per sq. ft. per deg. difference in temp. | 4.42 | 4.76 | 5.77 | 4.43 | 5.12 |

Note: Heats I and II with steam atomized tar; heat III with compressed natural gas and tar; heat IV with compressed air and tar; heat V with producer gas.



# PLANT EXPANSION AND EQUIPMENT BUYING

## Machine Tool Inquiry Brisk But Orders Lag

WHILE apprehension of a serious automobile strike has been allayed, machine tool orders have not responded in the measure expected. This leads to the conclusion that the fundamental obstacle confronting machine tools is the Securities Act of 1933 and drastic pending financial legislation.

Inquiries however continue at a brisk pace, with old concerns being heard from that have not been in the market for many years. Evidently the higher costs under codes are having an effect in stimulating replacement interest, although not yet strong enough to hurdle the Securities Act barrier.

### NORTH ATLANTIC

**Continental Can Co.,** 1 Pershing Square, New York, has let general contract to Austin Co. of California, Inc., Los Angeles, for one-story addition to branch plant, at San Jose, Cal. Cost about $40,000 with equipment. As recently reported, company has also awarded contract to same company for two-story addition to plant at Los Angeles, to cost about $150,000 with equipment. Francisco & Jacobus, 511 Fifth Avenue, New York, are architects and engineers.

**Superintendent of Lighthouses,** St. George, Staten Island, N. Y., asks bids until April 24 for lanterns for electric lights, flashing mechanisms, adapter bars, etc. (Proposal 46024).

**Hudson Radio Corpn.,** 45 Lispenard Street, New York, manufacturer of radio parts, midget sets, etc., has leased 14,000 sq. ft., in building at 120 East Sixteenth Street, for new plant.

**Fabricated Metallic Products Corpn.,** Bronx, New York, has been organized by Albert Bornstein, 345 Cypress Avenue, Bronx, and associates, to manufacture metal products.

**Board of Education,** Long Beach, L. I., plans manual training department in new multi-story school. Fund of $1,200,000 is being arranged. W. S. Sneider, 101 Park Avenue, New York, is architect.

**Bureau of Supplies and Accounts,** Navy Department, Washington, asks bids until April 24 for industrial thermometers, general laboratory thermometers, water magnifying tube thermometers, etc. (Schedule 2177); 180,000 pieces corrosion-resisting steel tableware (Schedule 2210); until April 27, 200,000 steel pads (Schedule 2181) for Brooklyn Navy Yard.

**Manhattan Water Meter Repair Co.,** 330 East Twenty-fourth Street, New York, manufacturer of water meter parts and operating general meter repair works, has leased building at 430 East Twenty-third Street for new plant.

**Steel-Clench Mfg. Corpn.,** New York, has been organized by Leonard Miller, Blue Point, L. I., and Robert Elkan, 15 Whitehall Street, New York, to manufacture auto clench hand stitch machines and parts.

**Signal Supply Officer,** Army Base, Brooklyn, asks bids until April 23 for one megger and one megger testing set (Circular 85); until April 24, 5600 ft. telephone cable (Circular 86); until April 27, filter capacitors, filter chokes, ball bearings, coupling capacitors and other radio parts and equipment (Circular 81); until April 30, 45 power supply units (Circular 89), bearings, piston pins, rod assemblies, terminal plates, brush heads, nuts, contact points and kindred equipment (Circular 87), and rectifier bulbs, tube rectifiers, etc. (Circular 88).

**Foster-Wheeler Corpn.,** 165 Broadway, New York, manufacturer of power plant and oil refining equipment, has acquired exclusive rights for manufacture in Canada of stokers and other fuel-burning equipment produced by Riley Stoker Corpn., Worcester, Mass., and will develop facilities for such line of production at branch plant at St. Catharines, Ont. Riley Engineering & Supply Co., Ltd., Toronto, will discontinue such production.

**H. K. Lorentzen,** 155 Leonard Street, New York, manufacturer of metal stampings and kindred metal products, has acquired through Lorentzen Holding Corpn. a subsidiary building at 77-81 Wooster Street, for new plant, increasing present capacity.

**Ross Brass Works, Inc.,** New York, has been organized by Robert Ross and associates, 1450 Broadway, to manufacture plumbers' brass goods. New company will take over organization of same name at 403 East Ninety-first Street.

**Board of Education,** 22 Valley Road, Montclair, N. J., Fred P. Reagle, secretary, asks bids until April 28 for supplies and equipment for manual training shop for 1934-35, supplies for elementary manual arts department, etc.

**R. C. A. Radiotron Co., Inc.,** 415 South Fifth Street, Harrison, N. J., manufacturer of radio tubes and equipment, has leased about 140,000 sq. ft. in one-story plant, at Kingsland Avenue and Hamilton Street, Newark, N. J., for new plant and will remove to new location and capacity increased.

**Braverman Electric Co., Inc.,** Vineland, N. J., has been organized by Jacob and Fred Braverman, 634 Landis Avenue, to manufacture electric appliances and equipment.

**Town Commission,** Montclair, N. J., is arranging fund of about $220,000 for extensions and improvements in municipal water system, including pumping machinery and accessories, pipe lines, etc.; also for new one-story repair and equipment shop for water department at Watchung pumping station. Otto A. Feth is water superintendent.

**Bureau of Supplies and Accounts,** Navy Department, Washington, asks bids until April 24 for one 600-hp. electric motor with control equipment and accessories (Schedule 2236-R) for Philadelphia Navy Yard.

**Atlantic Oil Producing Co.,** subsidiary of Atlantic Refining Co., 260 South Broad Street, Philadelphia, has taken option to purchase properties of American Liberty Oil Co., east Texas oil fields, comprising about 125 wells, 25 leases and other holdings, totaling over $5,000,000, and plans increased output in that district, including storage and distribution facilities, gathering lines, etc.

### NEW ENGLAND

**Bureau of Yards and Docks,** Navy Department, Washington, asks bids until May 2 for one motor-driven, high-pressure, four-stage air compressor (Specification 7639) for submarine base, New London, Conn.

**Claude Neon Sign Co. of Connecticut, Inc.,** Bridgeport, Conn., manufacturer of electric lighting equipment, tube lighting, etc., plans rebuilding part of plant, recently destroyed by fire. Loss about $40,000 with equipment.

**Terminal Wine Co.,** Boston, has acquired two-story building at 259 Friend Street, and five-story structure at 168 Canal Street, North End, for new plant for rectifying, blending, storage and distribution.

**George H. Todd Corpn.,** Rockport, Mass., has been organized by George H. Todd and F. Kenneth Perkins, 3 Dexter Place, Gloucester, Mass., to manufacture oil burners and oil-burning equipment.

**Albert Chapman,** Taunton, Mass., has acquired one-story plant of Bay State Tap & Die Co., on Grosvenor Street, about 27,000 sq. ft. floor space, and will remodel for machine and repair works, including parts production and automobile repair division. Tract of 130,000 sq. ft. is included in purchase for future expansion.

**Johnson Tool Co., Inc.,** East Providence, R. I., has been organized by Andrew E. Johnson, 36 Barnsdale Road, and associates, to manufacture tools and kindred equipment.

### OHIO AND INDIANA

**Dayton Rubber Mfg. Co.,** 2345 Riverview Avenue, Dayton, Ohio, manufacturer of automobile tires and other rubber products, plans extensions and improvements, including one-story addition. Cost about $55,000 with equipment. Geyer & Neuffer, Arcade Building, are architects.

**Ohio River Power Co.,** Canton, Ohio, plans transmission line over Muskingum River, near power plant at Philo, Ohio.

**Toledo Wire & Iron, Inc.,** Toledo, Ohio, has been organized by Robert C. Dunn and associates to manufacture iron and wire products. New company will take over Toledo Wire & Iron Co., 1200 Locust Street.

**Village Council,** Fairport, Ohio, plans installation of pumping machinery and other equipment, pipe lines, etc., for municipal water system. Fund of $95,000 has been secured through Federal aid. Lauer Engineering Co., Painesville, Ohio, is consulting engineer.

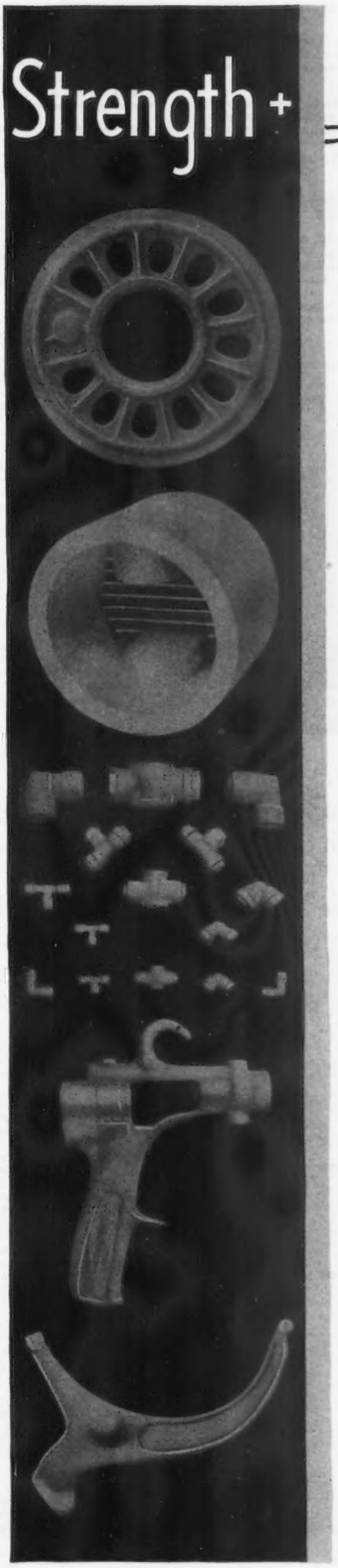
**Kroger Grocery & Baking Co.,** 35 East Seventh Street, Cincinnati, will take bids soon on general contract for new two-story and basement meat-packing and food products packing plant, 160 x 300 ft., adjoining present plants. Cost about $500,000 with equipment. Tietig & Lee, 34 West Sixth Street, are architects.

**Contracting Officer,** Material Division, Wright Field, Dayton, Ohio, asks bids until April 24 for energizer assemblies in lots of 14, 19 and

# For Strength + *Light Weight*

make it an

## ALCOA Aluminum Forging



Aircraft engines require light weight and dependable strength. This Alcoa Aluminum alloy forging provides the essential high strength, rigidity and light weight for a radial aircraft engine thrust bearing plate.

Forging LYNITE Pistons for aircraft engines makes them stronger—lighter too. The high strength of forged Alcoa Aluminum alloys provides for machining the walls thinner, thus reducing piston weight.

Tube fittings and valve bodies—Alcoa Aluminum alloy forgings are used in aircraft, refrigeration units, welding torch assemblies, etc., because of their light weight, superior resistance to corrosion and non-porous metal.

Paint spray gun body—a rugged, pressure-tight Alcoa Aluminum alloy forging, light to handle and capable of withstanding abuse.

Speed and stamina—the essentials of the best industrial sewing machines. This Alcoa Aluminum alloy forging provides the light weight and high strength required for a rapidly oscillating needle lever.

Problems of designing for high strength and light weight can be solved with heat-treated Alcoa Aluminum alloy forgings. The same strong Alcoa Aluminum alloys used in forged LYNITE connecting rods, aircraft propeller forgings and aircraft engine crankcases are also being used to greatest advantage in many other applications.

Alcoa Aluminum alloy forgings are available with tensile strengths as high as 60,000 to 70,000 pounds per square inch, with a high degree of ductility, outstanding resistance to corrosion and excellent thermal and electrical conductivity. They are pressure tight. The non-porous, homogeneous metal structure and smooth, clean surfaces of Alcoa forgings provide for finishing economy. They machine faster and readily take a high polish.

Skill in selection and fabrication of alloys is essential. Heat-treating requires thorough, experienced, technical control and equipment that is especially developed to obtain uniform and high physical properties.

Save power and reduce stresses by eliminating dead weight with Alcoa Aluminum alloy forgings. They afford manufacturing economies and are exceptionally well suited to the design of high quality products. Our engineers will gladly assist you. Write for our booklet entitled "Alcoa Aluminum and Its Alloys." ALUMINUM COMPANY of AMERICA; 1885 Gulf Building, PITTSBURGH, PENNSYLVANIA.

# ALCOA ALUMINUM

50; power plant units, lots of same quantities (Circular 440).

**Electrodes, Inc.**, Dayton, Ohio, has been organized by Fred L. Damarin, Kenneth L. Emmert and C. J. Stoecklein, 720 Reibold Building, to manufacture electrodes and kindred specialties for welding.

**Board of Public Service,** Oak Hill, Ohio, plans installation of pumping machinery and other equipment, pipe lines, etc., for municipal waterworks. Fund of $100,000 has been arranged through Federal aid. H. K. Bell, McClelland Building, Lexington, Ky., is consulting engineer.

**O'Shaughnessy Brothers,** Lawrenceburg, Ind., recently formed to operate a local distillery, have taken over about 22-acre tract and will soon begin erection of one, five and seven-story buildings, last noted for storage and distribution. Plant will include power house, machine shop and other mechanical departments. Cost over $125,000 with equipment. Hillsmith & Co., 108 East Third Street, Dayton, Ohio, are engineers. William and Eugene O'Shaughnessy, Lawrenceburg, are president and vice-president respectively.

**Peru Radio Laboratories, Inc.,** Peru, Ind., has been organized by Allen Cain and Burl E. Sherrill, 481 East Third Street, to manufacture radio equipment and parts.

**Servel, Inc.,** Evansville, Ind., manufacturer of electric and gas refrigerators, has let general contract to M. J. Hoffman Construction Co., Furniture Building, for one-story addition, 40 x 75 ft., for storage and distribution.

## BUFFALO DISTRICT

**Texas Oil Co., Sun Oil Co., Shell Oil Co., and Colonial Beacon Oil Co.,** all of Buffalo, have let joint contract to Lakeland Engineering & Construction Corpn., Electric Building, for new 450 ft. dock and oil terminal on Niagara River, near Grand Island ferry landing, Tonawanda, N. Y., for unloading oil barges, storage, distribution, etc. Pipe lines will be installed to main oil storage plants of companies noted, about one-half mile distant. Cost over $75,000 with equipment.

**Board of Education,** Lyndonville, N. Y., plans manual training department in new two-story high school, for which bids will be asked early in May. Cost close to $100,000. Raymond A. Freeburg, Jamestown, N. Y., is architect.

**City Council,** Lockport, N. Y., has bid in factory of Covert Gear & Mfg. Co., Lock and Grand Streets, defunct, at public sale for amount of unpaid city taxes, $51,798.68, and will take title to property, placing it on market soon.

**Spencer Kellogg & Sons,** Buffalo, are retiring from core oil business, which with good will and unexpired contracts is being taken over by Werner G. Smith Co., Cleveland. No change will be made in any of formulae or methods of manufacture.

## WESTERN PENNA.

**Henry Furnace & Foundry Co.,** 3471 East Forty-ninth Street, Cleveland, manufacturer of house-heating furnaces, furnace castings, etc., has leased building at South Eighteenth and Merriman Streets, Pittsburgh, about 20,000 sq. ft. floor space, and will remodel for new factory branch, storage and distributing plant.

**Bureau of Yards and Docks,** Navy Department, Washington, asks bids until May 16 for remodeling two bridge cranes at South Charleston, W. Va., and transporting units from that point to Puget Sound Navy Yard, Bremerton, Wash. (Specification 7590).

**Sun Oil Co.,** 1608 Walnut Street, Philadelphia, has plans for new two-story storage and distributing plant, 40 x 300 ft., at Fairmont, W. Va., including steel tank capacity for 100,000 gal. Cost about $40,000 with equipment.

**Pittsburgh Steel Foundries, Inc.,** Wheatland, Pa., is arranging for resumption of operations early in May, following shut-down for nearly three years. Employment will be given to about 100 men for initial production.

## SOUTH ATLANTIC

**Board of Greenwood County Commissioners,** Greenwood, S. C., plans new hydroelectric generating plant on Saluda River, near Chappells, S. C. Cost about $1,000,000 with equipment, including transmission lines, substations and other structures. Federal financing is being arranged. D. T. Duncan, Greenwood, is consulting engineer.

**Harris Foundry & Machine Co.,** Cordele, Ga., plans purchase of belt-driven air compressor, with accessories.

**Purchasing and Contracting Officer,** Quartermaster Corps, Fort Moultrie, S. C., asks bids until April 24 for force pumps, bushings, unions, plugs, valves, cocks, supply pipe, washers, screws, etc. (Circular 24).

**Newman Machine Co., Inc.,** Greensboro, N. C., recently organized by G. F. and H. L. Newman, and M. F. Douglas, Greensboro, plans operation of general machine and repair works, with division for assembling machinery.

## SOUTH CENTRAL

**Director of Purchases,** Tennessee Valley Authority, New Sprankle Building, Knoxville, Tenn., asks bids until April 23 for four 8-ton capacity standard gage gasoline locomotives for Norris Dam; two dump-type steel transfer cars for conveying concrete from mixer plant to cableway at Norris Dam; one or two derrick barges with hoists combined (or one or two derrick barges and one or two derricks with hoists), and one or two whirler barges, one or two whirlers, or combined whirlers and barges for use at Joe Wheeler Dam.

**Frick-Reid Supply Co.,** 108 North Trenton Street, Tulsa, Okla., oil well equipment and supplies, plans one-story factory branch, storage and distributing plant at Lake Charles, La., with pipe cutting, threading and handling facilities.

**Buffalo Springs Distilling Co.,** Stamping Ground, Ky., will take bids soon for addition. Cost about $75,000 with equipment. Walter C. Wagner, Breslin Building, Louisville, is architect.

**City Council,** Tracy City, Tenn., has taken over about 75 acres between city and Monteagle, Tenn., as site for new municipal airport, to include hangar, with repair and reconditioning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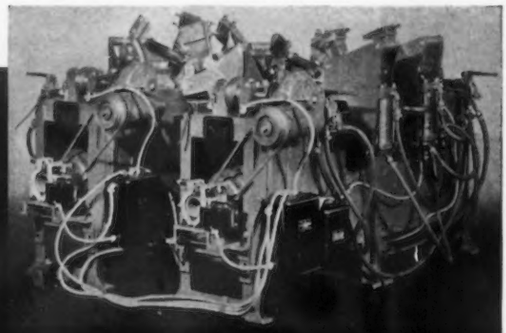

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## The RIVERSIDE METAL CO.

**RIVERSIDE** ***Burlington County*** **NEW JERSEY**

shop, oil storage and distribution buildings, and other field structures. Cost close to $50,000 with equipment.

**New England Distilling Co.,** 115 Pike Street, Covington, Ky., plans new storage and distributing plant. Cost about $30,000 with equipment.

**Common Council,** Warsaw, Ky., plans installation of pumping machinery and auxiliary equipment, pipe lines, etc., for municipal waterworks. Fund of $32,000 is being arranged. C. N. Harrub Engineering Co., American National Bank Building, Nashville, Tenn., is consulting engineer.

## WASHINGTON DISTRICT

**Purchasing and Contracting Officer,** Holabird Quartermaster Depot, Baltimore, asks bids until April 24 for 20 special dump cargo bodies with underbody hydraulic hoists, complete for mounting on motor trucks (Circular 113).

**Superintendent, Submarine Mine Depot,** Fort Monroe, Va., asks bids until April 26 for 12,200 galvanized clips (Circular 11).

**Board of Public Works,** Annapolis, Md., plans new municipal incinerator plant, capacity 60 tons, with power house, unloading, conveying, fuel-handling and other equipment. Cost over $85,000 with machinery. Levin J. Houston, Jr., Fredericksburg, Va., is consulting engineer.

**Chemical Warfare Service,** Edgewood Arsenal, Md., asks bids until April 23 for 84 steel cylinders, each 310-lb. water capacity (Circular 54), one enamel-lined steel still, 105 gal. capacity (Circular 53); until April 24, two lathes, one motor driven, and one floor drill (Circular 49).

**Old Maryland Rye Distilling Co.,** Baltimore, has plans for extensions and improvements in three-story plant, including new equipment. Cost over $35,000 with machinery. G. E. Stone and Alexander G. Porter, 512 St. Paul Street, are architects.

**Bureau of Supplies and Accounts,** Navy Department, Washington, asks bids until April 24 for one 20-in. stroke, motor-driven shaper (Schedule 2235-R) for Homestead Naval Station; brass, copper and steel wire (Schedule 2222) for Sewall's Point, Va., Navy Yard; wire rope clips (Schedule 2165) for Brooklyn, Sewall's Point and Mare Island yards.

## SOUTHWEST

**A. M. Jones Distillery, Inc.,** Kansas City, Mo., recently organized, care Fred C. Gunn, National Fidelity Life Building, architect, plans new works near Highway 69, vicinity of Linden, Mo., where property has been acquired, to include power house, machine shop and other mechanical departments. Cost over $75,000 with equipment. Abram Rosenberger, Ridge Building, Kansas City, will be identified with new company.

**City Council,** Clarkton, Mo., plans purchase of vertical turbine pumping machinery and accessories, 50,000-gal. steel tank on 125 ft. tower, pipe lines, etc., for municipal water system. W. A. Fuller Co., 2916 Shenandoah Avenue, St. Louis, is consulting engineer.

**Cupples-Hesse Envelope & Lithographing Co.,** 4173 North Kingshighway, St. Louis, manufacturer of commercial paper products, will soon begin superstructure for one-story addition, 75 x 170 ft. Austin Co., Arcade Building, is engineer and contractor. Cost over $60,000 with equipment.

**Randolph Dock Co.,** Kansas City, Mo., care of Heidenreich Engineering Co., Railway Exchange Building, consulting engineer, plans new dock and grain elevator, with elevating, conveying, screening and other mechanical-handling equipment, hoist house, power station and other units. Fund of $690,000 is being arranged through Federal aid.

**Ordnance Officer,** Eighth Corps Area, Fort Sam Houston, Tex., asks bids until April 23 for one bench lathe (Circular 1), air compressor (Circular 2), 1 to 5-hp. electric motors (Circular 3), two sensitive high-speed bench drills (Circular 4), connecting rod boring attachment (Circular 5), vapor spray cleaning machine (Circular 6), welding and cutting equipment (Circular 7), universal grinding machine (Circular 8), two portable electric drills (Circular 9), four pedestal grinders, universal tool post grinder, and two bench grinders (Circular 10), 324 twist drills, set of reamers, five gear-cutters, magnetic chuck and one magnetic plate (Circular 11), portable compressor grease gun, four sets socket wrenches, one set gear puller, four sets box wrenches, two sets tappet wrenches, etc. (Circular 12), steel shelving, bins, etc. (Circular 13), and one lift truck (Circular 14).

## MIDDLE WEST

**Hurley Machine Co.,** West Cermak Road and South Fifty-fourth Avenue, Cicero, Chicago, manufacturer of domestic electric appliances and equipment, including electric washers and ironers, etc., has let general contract to E. L. Archibald Co., Inc., 111 West Washington Street, for one-story addition, about 40,000 sq. ft. floor space. Cost $50,000 with equipment.

**Fairbanks, Morse & Co.,** 900 South Wabash Avenue, Chicago, manufacturers of engines and parts, pumps, scales, water systems, etc., have purchased Audiola Radio Co., 430 South Green Street, manufacturer of radio receivers and equipment, parts, etc., and will continue operations under present name as a subsidiary. Purchasing company plans expansion in new division for production of electric refrigerators and electric washing machines.

**Rail-Free Spike Co.,** 59 East Van Buren Street, Chicago, has been organized by Michael R. Kazunas and Laurence R. Van Ness, to manufacture railroad spikes and kindred equipment.

**Dubuque Oil Burner Co.,** 51 West Thirty-second Street, Dubuque, Iowa, manufacturer of oil burners and oil-burning equipment, has taken over four-story building, location noted, and will remodel for new plant. A. F. Decker is secretary and treasurer.

**Common Council,** Milford, Iowa, will take bids soon for equipment for new municipal electric light and power plant. Fund of $70,000 has been arranged. Buell & Winter Engineering Co., Insurance Exchange Building, Sioux City, Iowa, is consulting engineer.

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has plans for one-story extension to engine house and shop at Minneapolis, Minn.

**Construction Service,** Veterans' Administration, Washington, asks bids until May 1 for deep well pumping unit and auxiliary equipment, pipe line, etc., for institution at Cheyenne, Wyo.

**Schatzbrau Brewing Co.,** Melrose, Minn., has plans for new three-story and basement plant, 80 x 180 ft., and will soon purchase equipment. Fred C. Crisp, 3225 Humboldt Avenue South, Minneapolis, is general contractor. Cost over $150,000 with machinery. L. F. Schafhausen, 2652 Bryant Avenue South, Minneapolis, is architect.

**Iowa Southern Utilities Co.,** Centerville, Iowa, plans new transmission line in part of Wapello County.

**Hall's Distillery, Inc.,** 920 South Madison Street, Green Bay, Wis., is taking bids for additions to and remodeling former Hagemeister Brewing Co. plant into distillery, at cost of $175,000. Plans are by R. B. Williamson, architect, 707 North Broadway, Milwaukee. Harry Bond is president.

**Northwestern Electric & Machinery Co.,** 1516 West National Avenue, Milwaukee, manufacturer and rebuilder of motors and machinery, sustained loss of about $50,000 by fire April 8. Plans for rebuilding have not been completed. Frank Grossman is president and general manager.

**George J. Meyer Mfg. Co.,** Milwaukee, manufacturer of automatic machinery for breweries, distilleries, wineries, dairies and other bottling purposes, will establish a plant in England, according to advices from George J. Meyer, president, who has been in Europe for past three months. It is said this action is being taken to offset heavy tariff imposts on large volume of business company is doing in England. Canadian and French orders, however, will still be filled from Milwaukee.

## MICHIGAN DISTRICT

**AC Spark Plug Co., Inc.,** Flint, Mich., has plans for one-story addition, 45 x 250 ft., for production of steel bearings for automobiles and airplanes, a new line now being developed by company, in addition to regular manufacture of spark plugs and spark plug cores. Cost about $65,000 with equipment. Company is a subsidiary of General Motors Corpn.

**Flint Hill Brewing Co.,** Flint, Mich., has let general contract to Koepke Brothers, Saginaw, Mich., for first unit of new plant, to be used as a mechanical bottling works. Cost about $35,000 with equipment. Entire brewery will cost close to $100,000 with machinery. George Bachman, Flint, is architect.

**Continental Engineering, Inc.,** 419 East Hendrie Street, Detroit, has been organized by E. M. Haley, 13728 Thornton Avenue, and associates, to manufacture tools and kindred equipment.

**Parker-Wolverine Co.,** Detroit, has been organized to take over and consolidate Parker Rust-Proof Co., 2177 East Milwaukee Street, manufacturer of plated metal products, and Wolverine Enameling Co., 5203 Martin Avenue, manufacturer of enameled metal goods. Both plants will be continued in service, with all enameling operations concentrated at last noted works. Consolidated company is arranging for sale of stock for $100,000, part of fund to be used for general expansion and development. Charles H. Awkerman, formerly vice-president of Parker company, is president of new organization.

## PACIFIC COAST

**Oliver Tire & Rubber Co.,** 4343 San Pablo Avenue, Emeryville, Cal., has let general contract to Fred J. Early, 1629 Telegraph Avenue, Oakland, Cal., for one-story addition, 50 x 100 ft. Cost about $25,000 with equipment. W. Adrian, 417 Market Street, San Francisco, is engineer.

**Western Waxed Paper Co.,** 910 East Sixty-first Street, Los Angeles, has let general contract to Lindgren & Swinerton, Inc., 523 West Sixth Street, for one-story addition, 100 x 150 ft. Cost about $30,000 with equipment. George J. Fosdyke, 112 North Main Street, is engineer.

**Co-Operative Winery,** Woodbridge, Cal., Col. Walter E. Garrison, president, plans new works on 8-acre tract, with storage and distributing buildings, power house and machine shop. Cost close to $100,000 with equipment.

**Lockheed Aircraft Corpn.,** Burbank, Cal., manufacturer cabin airplanes and parts, plans additions, with installation of considerable equipment for increased parts production and assembling. Company is arranging financing for $250,000, considerable part of fund to be used for purpose noted. Lloyd Stearman is president.

**City Council,** Lodi, Cal., is planning new municipal hydroelectric generating plant on Mokelumne River. Cost about $580,000 with transmission lines, substation and other distribution facilities. It is proposed to arrange bond issue for project. Nelson A. Eckert and F. C. Herrmann are consulting engineers.

**Bureau of Supplies and Accounts,** Navy Department, Washington, asks bids until April 24 for 22,200 lb. iron or steel welding electrodes (Schedule 2176) for Mare Island Navy Yard; until April 27, ball bearings (Schedule 2178) for Mare Island, San Diego and Puget Sound yards; 40,000 lb. rolled zinc plate (Schedule 2182) for San Diego yard; twist drills (Schedule 2194) for Puget Sound yard.

**Master Oil Burner Co., Inc.,** 405 Dexter Avenue, Seattle, manufacturer of oil burners and oil-burning equipment, has taken out a permit for new one-story plant, 74 x 75 ft.

**Golden State Salami Co.,** 601 Franklin Street, Oakland, Cal., meat packer, plans new one-story plant on East Fourteenth Street. Cost about $175,000 with equipment.

## FOREIGN

**Secretary of Stores Division,** Post and Telegraph Department, Wellington, New Zealand, asks bids until May 22 for about two tons of steel bolts and hexagon nuts, ½ in. diameter by 1¾ in. long.

**Ministry of War,** Chinese National Government, Nanking, China, is considering erection of iron and steel works on site of former Lunghua Arsenal, Shanghai, China, including remodeling of present buildings and additional units, with installation of equipment. Cost over $500,000 with machinery.

## TRADE NOTES

**Barde Steel Co. and Doran Co.,** both of Seattle, have been appointed distributers of Enduro stainless steel, by Republic Steel Corpn., Youngstown.

**American Hoist & Derrick Co.,** St. Paul, Minn., has named Tanner-Willard Co., 317 North Eleventh Street, St. Louis, to handle sale of its equipment to railroads in St. Louis territory.

**Iron & Steel Products, Inc.,** Railway Exchange, Chicago, has discontinued its St. Louis district office which has been under direction of L. C. Sparks.

**Don F. Johnson & Co., Inc.,** 156 Main Street, Buffalo, has been named sales representatives in Buffalo district for Cimatool-Paulins standard drill jigs and locks and Sheffield gages, made by City Machine & Tool Works and Sheffield Machine & Tool Co., Dayton, Ohio.

**Gears and Speed Reducers**—Horsburgh & Scott Co., Cleveland. General catalog No. 34. 448 pages. This contains complete lists of all types of gears, giving catalog numbers and prices. Nearly all numbers of teeth are included. Both circular pitch and diametral pitch spur gears are included. Latest gear engineering data, horsepower ratings and tooth loads for each gear listed take up 108 pages. A comprehensive hob list is also included. In addition there is a section devoted to speed reducer engineering and data.

**Cap Screws**—Cleveland Cap Screw Co., Cleveland. Catalog 16 pages. This contains price lists of the company's cap and set screws, hexagon and plain semi-finished nuts and castellated nuts, carriage, machine and other bolts. Quality of the company's product, which is made by Kaufman process, is stressed. This process, which was developed by this company for upsetting and extruding cap screw blanks, is now also being used in manufacture of carriage and machine bolts.

**G-O Machinery & Liquidating Co.,** dealer in new and used machinery, has moved to 125 Arthur Street, Buffalo, where it has a larger warehouse.

**Roll Grinders.**—Landis Tool Co., Waynesboro, Pa. Catalog No. H-34, 12 pages, describing the type B hydraulic roll grinder, which is built in 16, 20, 24, and 28-in. swings and in any length between 8 and 16 ft. Illustrations are large and include many details. Specifications are given.

**H. O. Swoboda, Inc.,** Pittsburgh, announces appointment of Maxfield Pease to succeed the late E. H. Merrick as sales representative for northern Ohio territory. With offices at 4614 Prospect Avenue, Cleveland, Mr. Pease will handle company's entire line of Falcon continuous electric heat-treating furnaces, bare electric immersion heaters, and special industrial heating equipment.


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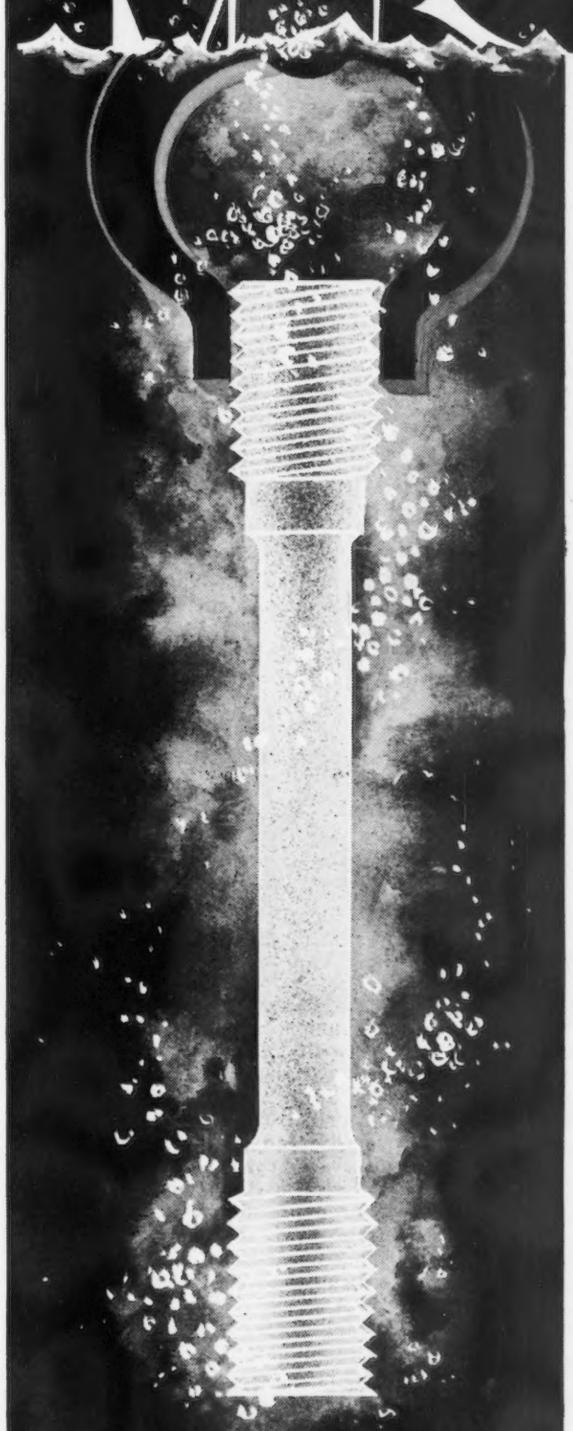

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CLIMAX Mo-lyb-den-um

# Experimenting With Dies Promises Improved Wire Manufacture

*(Concluded from Page 11)*

haps six or eight times as high. Consider the natural consequences. With $m$. $y$: $p$. lowered, $A$-$a$ could be increased in inverse proportion. Both deforming and frictional forces would respond. The heavy die pull which a chilled wire could well stand would be chargeable not to yield point, which means friction and die wear, but only to an extremely profitable adjustment in the factor $A$-$a$.

Hot drawing of course introduces entirely new problems. Yet they do not look insoluble. In fact a little experimental work has been done and indicates that the deductions that would naturally be made from a study of the basic formula are sound.

There are other possibilities latent in the stress relations expressed in the formula, and its various implications. It is probable, for example, that a contemplation of the wide gap in coefficient of friction as between dry and wet drawing will some day point the way toward a better technique in the production of extra bright wire.

Now, as to confidence in the stress formula, and, if it is sound, why it has gone so long undiscovered, or at least unreported. It may seem a little too smooth and simple. I have set it up to be shot at several times and it hasn't yet drawn a shot. I don't know whether that means that it is invulnerable or simply that those concerned are too busy to consider the matter. Some research is being done along this line in the laboratories of the larger mills, but nothing is being reported. I do not see how anything so broad and of such general application can be regarded as a trade secret. It is my hope that those who are working at the problem with ample facilities will decide to join in a discussion.

The application of the formula is not quite as smooth and simple as this brief report would indicate. Some inconsistencies and irregularities need clearing up, and this work will require more time and facilities than any single observer can command. Drafts of extreme severity always show abnormally low coefficient of friction in a cylindrical bearing may angles also show a low coefficient, and there is ground for suspicion that the friction in a cylindrical bearing may be a little lower than in the associated cone.

A confusion of terms relating to dies makes discussion difficult. "Cylindrical" bearings are rarely true cylinders. If they are ground in from the exit side they have a slight reverse taper and their area must be ignored.

Very slight inaccuracies in angle affect the friction calculations seriously.

It is hard to work to any standard in the degree of die polish, and in the effectiveness of the "lubrication."

Finally, in the range below 30 ft. per min., the range where most laboratory work is done, yield point varies with speed, and the variation is not entirely steady.

Professor Thompson of Manchester, England, whose careful observations and modest reports inspire confidence, has noted in the "flat" part of the die pull-die angle curve a series of periodic peaks which repeat themselves in each determination rather accurately. This is only one of many points awaiting explanation.

# Wire Rod Mill Proposed for the U. S. S. R.

*(Concluded from Page 13)*

(central lubricating system, reels, conveyor, etc.) may be calculated as sum of items 6 to 12, inclusive, of the table, or 150 tons. The weight of items 4 and 5 will be increased about 20 per cent, making 65 tons more. The increased weight for the mill proposed as compared with a plain continuous mill, therefore, amounts to $65 + 150 = 215$ tons, i. e., 28 per cent of 775 tons. Thus we can raise the capacity of a continuous mill 75 to 100 per cent by increasing its weight 28 to 30 per cent and by addition of corresponding electrical equipment. The cost of additional building and number of workmen operating the mill increases about 20 and 25 per cent, respectively. Such a mill will make about 35 tons an hour.

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The fourth edition of "Metallurgy of Iron and Steel," by Bradley Stoughton, recently published by McGraw-Hill Book Co., Inc., New York, is a completely revised treatment of the excellent first edition published in 1908. The new manuscript is a concise and understandable treatise on every branch of the iron and steel industry, covering present production practices from the extraction of metal from ores to the testing of the finished product. A goodly space is allocated to the basic open-hearth process, and the fabricating of different shapes is discussed in a nontechnical manner. The constitutions and heat treatments and the art of foundering irons and steels are also reviewed. Although the mode of presentation is particularly designed for college instruction, plant men should find the book extremely useful as a consulting and educational medium.


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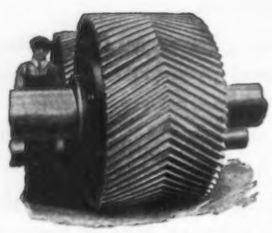

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No Change In Chemistry
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The increased machinability of Jones & Laughlin Improved Bessemer Screw Stock has been demonstrated in the actual production of a wide variety of parts. A few such cases are noted above. Improved appearance has also been reported in most cases. Investigate the opportunity of securing increased production in your operations through the use of this improved stock. It is supplied in both S.A.E. 1112 and **J&L** Special High Sulphur Bessemer Screw Steel, in hot rolled bars, cold finished bars, and drawn wire. Write for descriptive bulletin or for specific application information.

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## The Iron Industry, Yesterday, Today and Tomorrow

*(Concluded from Page 21)*

be carried to distant markets. Furthermore, the science of technology has made possible diverse uses of steel products to an extent scarcely conceivable in the early days. The industry, therefore, has long since ceased to be dependent upon war for its primary markets. Need it be said that this is a natural evolution, the result of the advancement of science and the labor of men through the generations.

It is said by some of those who have not contributed in the smallest degree to the development of our modern industrial and transportation systems, and by certain men whose vocation it is to care for the spiritual development of man, that such growth is foredoomed to disaster, and they offer the road back to primitive days as a remedy for our economic ills; to the days when men, half-naked, toiled long hours in the old forges, only to go home to barren rooms in primitive cottages; to the days when man was compelled to endure all the hardships of the elements, hauling his product to nearby markets in horse-drawn wagons; to the days when his children were deprived of all the spiritual and material luxuries of life.

Where were these theorists, these iconoclasts, at the close of the Napoleonic wars? Then man was worked as a machine to his fullest capacity, one-tenth of one horsepower; and he was left starving and dying when the wars ended.

If the iron industry could survive this condition over a century ago, how much more optimistic should we be today with our superior means and methods, technology, the one outstanding factor in man's rise from the animal machine, the pack horse, into a spirit and a mind.

We can readily understand how it is natural to propose during unfortunate times not only new medicines for an ailing heart, but an entirely new system of nerves and arteries to feed it. This is the age-old, natural reaction to a dim conception of a world which is ever changing and has reached another of its low points. However, such propositions are the results of faithless short sight, skipping blithely up a tangent as far removed as possible from the line of proved practicability.

The men of the iron industry—I take the liberty to suggest—are not ogres put upon the earth to be demoted into mere animal machines; but men who are striving, each with his own limitations, toward the creation of a world in which it is a happy thing to be alive.


**Spiral-Flo PUMPS**

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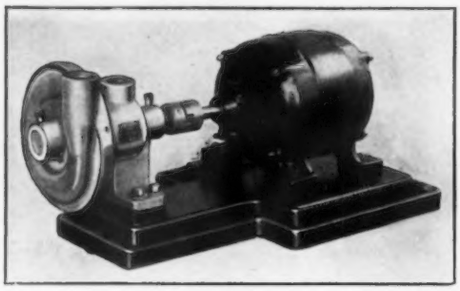


*Capacities 2½—52 G.P.M.*

*Write for Bulletin No. 4.*

**TOMKINS-JOHNSON COMPANY**
628 N. MECHANIC STREET, JACKSON, MICHIGAN


## Ingersoll Steel & Disc Has Golden Anniversary

IN celebrating its fiftieth anniversary this month, the Ingersoll Steel & Disc Co., Chicago, a division of the Borg-Warner Corpn., is operating at the best rate in its history and is extremely optimistic over future prospects.

The company was formed by Stephen A. Ingersoll in 1884 as the Sandoval Mfg. Co. for the production of agricultural implement disks. In a small shop in Sandoval, Ill., Mr. Ingersoll and 10 shop men started manufacturing coulter disks for plow shares and soon expanded their products to include disks for various agricultural and road machinery. The name of the company was subsequently changed to the Coulter Disc Co., and in 1904 it was moved to Galesburg, Ill., and became the Galesburg-Coulter Disc Co.

This organization pioneered in the development of two- and three-ply steels, wherein a very hard steel was combined in layers with soft steels in order better to absorb the severe shocks encountered in road working and agricultural usage. With the development of the automobile the Galesburg-Coulter Disc Co. found its processes ideally adapted to the production of clutch plates and other automotive products. It subsequently purchased a rolling mill at Newcastle, Ind., and a larger mill at West Pullman, Ill.

In order to diversify its manufactured products, the Borg-Warner Corpn. brought the Galesburg-Coulter company into its family subsidiary organization in 1929. The following year the name was changed to the Ingersoll Steel & Disc Co.

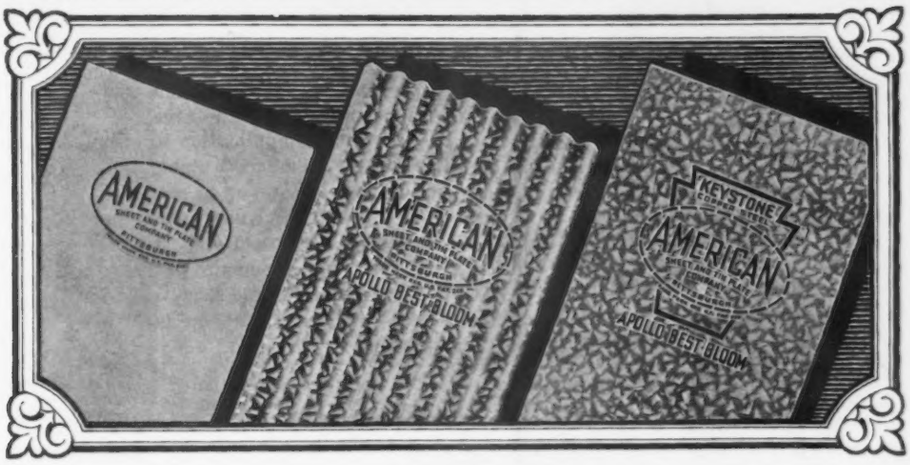
A few years ago it brought out its stainless clad steel known as Ing-Aclad, a material having a surface of stainless steel with a bonded foundation of mild steel, giving the advantages of solid stainless steel at greatly reduced cost. S. L. Ingersoll, vice-president of the company, and principal creator of IngAclad stainless clad steel, has recently returned from a trip through the industrial centers of the country and reports an unprecedented interest in the use of stainless steel products indicative of a revolutionary trend toward the adoption of stainless steel for many applications where other metals have been formerly employed. He is devoting his energies to the development and furthering the use of stainless clad steel and is associated in this work with J. Howard Wess, Jr., chief sales engineer who has devoted many years to the marketing of alloy steels.

As a golden anniversary gift to its employees the company has entered into a group insurance plan for all employees which provides, not only death benefits, but also for compensation in case of sickness or accident. In connection with this group insurance plan the company feels that it is quite in keeping with the progressive policies of companies endeavoring to cope with present day problems leading to the betterment of employer-employee relationships.

# AMERICAN

## STEEL SHEETS for EVERY PURPOSE

*Write for information, weight cards, and literature*

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USS

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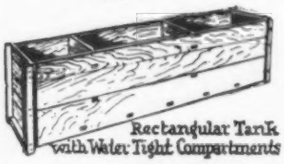
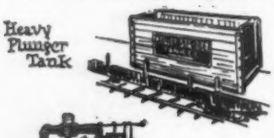
Rubber Lined Tank Car

20 ft. Elliptical Tank

Concave Bottom Tank

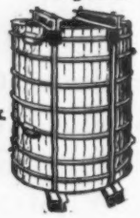


Rectangular Tank with Water Tight Compartments

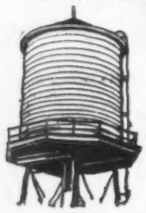


Heavy Plunger Tank

Tank Equipped with Self-Contained Agitator



Pressure Tank



40000 Gallon Sprinkler Tank

THE HAUSER-STANDER TANK CO.
*Write for Catalog!*
CINCINNATI, OHIO

# Wage Fixing Without Price Fixing Threatens Small Business Units

*(Concluded from Page 25)*

I have no quarrel with this action. I emphasize the implications of the change only to point my argument that having set our hands to this plow there can be no turning back. We must plow the furrow to the end. Its direction is clearly indicated. We have denied the free competition law as to the price of labor and retained it as to commodity prices. The balance of forces which formerly assured general financial stability by producing stability by producing the return of cost, is overthrown. It can be restored only by an equivalent and simultaneous denial of the free competition law in its application to commodity prices. As we fix a point below which wages cannot go, so we must find and fix a point below which the commodity price cannot go. Unless we do this, our economic processes will be speculative and chaotic, because they will respond to no governing principle.

### Ideal Price Control

The ideal method of price control which retains the greatest guarantee of individual liberty, is the control of individual commodity prices by individual costs. All long-range planning should be directed toward this ultimate objective. For emergency purposes, it will take too much time to put this control into operation. The same objection, with others, removes the suggestion of governmentally fixed prices from the realm of practical consideration. The remaining alternative is minimum price levels established by industry under governmental supervision with an excess profits tax to prevent or recapture excessive profits. This policy should, of course, be recognized as a temporary substitute for the ultimate cost control method.

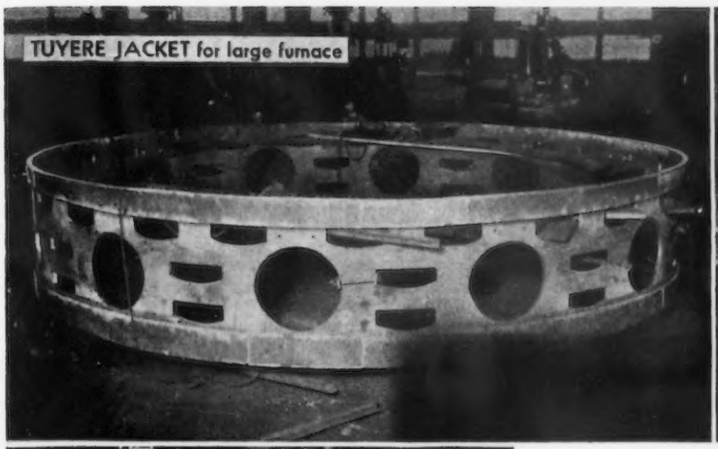
This situation may be summed up as follows: it is not that what we have done is wrong but it is incomplete. We have declared that there is no reasonable wage for labor that does not meet a decent living standard. If we want to maintain that ideal we must also declare that there is no reasonable price to the consumer which does not cover that reasonable wage cost all the way back. And that declaration must be made not for the benefit of the employer but as the guarantee of the integrity of the financial structure upon which the welfare of employer, labor and consumer conjointly will continue to depend, so long as the private property device shall endure.

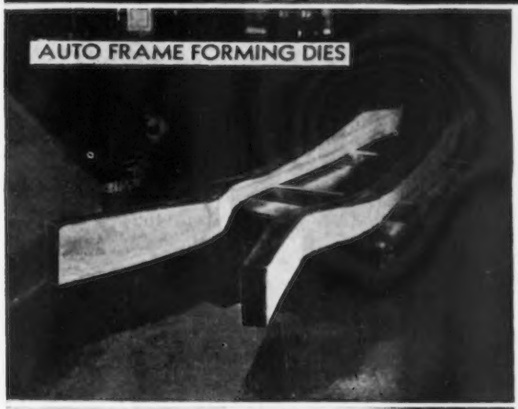
# Top Firing by Gas Of Galvanizing Pots

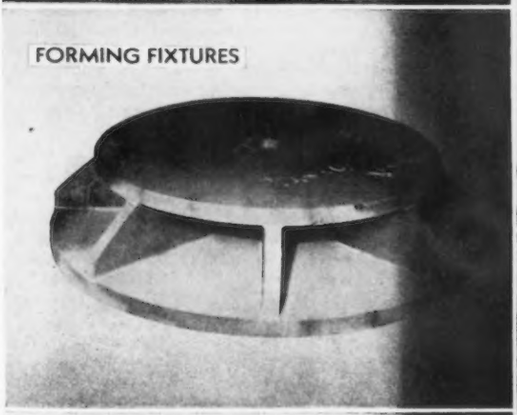
AN improved method of firing galvanizing pots in the plant of the Oliver Iron & Steel Corpn., Pittsburgh, is reported by J. B. Nealey, American Gas Association. There are two large pots, 12 and 25 ft. in length respectively and several smaller ones. The designers took into consideration that all of the cold metal is introduced at the top, the cold work enters also at the top, quantities of cold air are always in contact with the top surface of the liquid metal and much heat is lost through black body radiation from this surface. This led to the conclusion that the heat was needed most in the upper part, rather than at the bottom, so the burners are set about 1½ ft. below the top.

The heat is supplied by a number of gas burners of the inspirator impact type, cemented into the outer furnace walls. In front of each burner is a small chamber, built directly into the wall, in the bottom of which is a bed of refractory material. The gas burners fire directly upon these refractory beds, which are brought into incandescence. The hot products of combustion are drawn over a low bridge wall and down the sides and bottom of the kettle to a common duct, running the entire length of the tank, to a stack.

The radiation from the refractory beds is to promote complete combustion in the shortest space and quickest time. While the furnace walls facing the kettle become radiant and radiate a large quantity of heat to the kettle walls, most of the heat into the tank is through convection, due to the fact that the distance between the furnace and kettle walls was designed to provide the greatest velocity for the passage of the products of combustion. This method is found to afford material savings in fuel, labor and dross accumulation, to increase production and tank life.

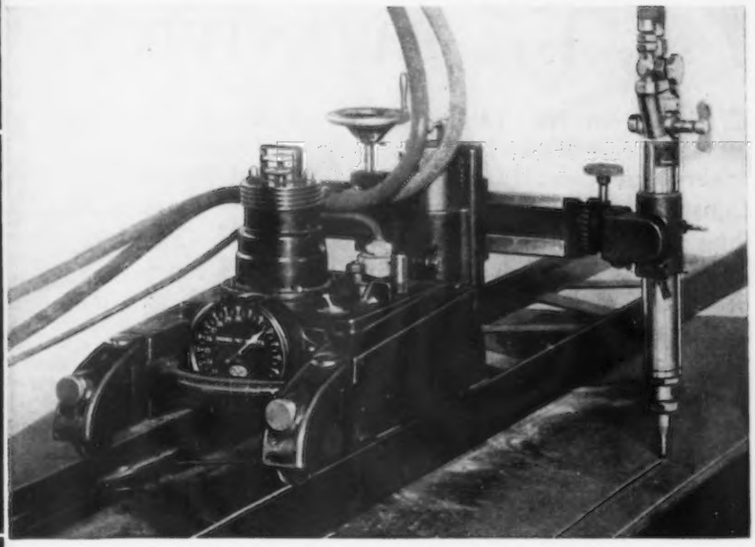




# On Jobs like these

## you need the AIRCO-DB No. 4 RADIAGRAPH



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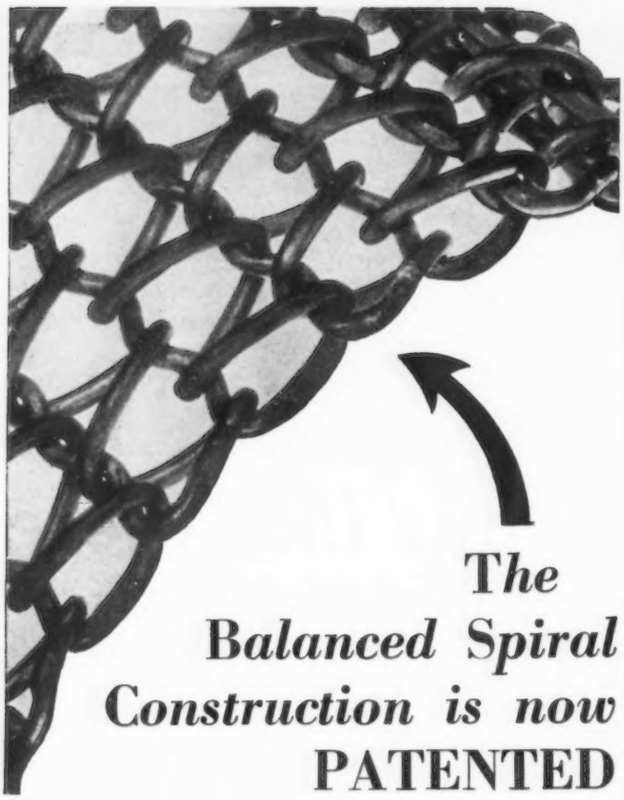

*The Balanced Spiral Construction is now* PATENTED

U. S. Patent No. 1,952,873, issued March 27, 1934, to the Wickwire Spencer Steel Company, covers our recently developed Balanced Spiral Construction. Numerous special features have long been identified with Wissco Metal Conveyor Belts . . . each one adding to the efficiency of Wissco Belts for washing, drying, annealing, baking and otherwise conditioning materials. The new Balanced Spiral is a Wissco development that has many attractive features from an operating and service standpoint, and will repay your investigation. Every Wissco Belt is built for specific service. Write for questionnaire . . . a study of your problem may surprise you.

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# JUST BETWEEN US TWO

## Great Big Guys

OUR knuckles are cracked by B. D. Spofford of The Duriron Co. for this syntactical sin in our Mar. 29 column, "Via Midvale's excellent *little employees' magazine.*"

"This refers to a children's magazine, I presume—or maybe they employ Lilliputians," he sneers. *They do not.* On the contrary, Midvale men are big and bemuscled, judging from the photographs taken by John P. Mudd, editor of the excellent little magazine for Midvale employees.

The fault lies with Spencer's Business College, whose diploma we hold. We'll sue 'em.

## Who Would Bother?

WHY is it that individuals who interlard their monologues with whispered "I don't want to be quoted on this," never say anything worth quoting?

## Dirty Work at the Crossroads

MAYBE it isn't true that the past three or four years have established an all-time high graft and corruption record. Perhaps it just seems that way. If we had closer acquaintance with conditions existing during the regimes of President Grant, George III, Lorenzo The Magnificent, Pericles, Pharaoh, and some of the other boys who managed to get their names in the paper, we would probably find that the cupidity curve is now no higher than usual.

They had their gentlemen of easy conscience in other days. Take, for example, the experience of Andrew Yarranton, as related in a monograph on the tinplate works of Great Britain. In 1660 Andrew took a couple of "iron experts" to Saxony to look over the tin plate industry there. He hurried back, and, with some financial backing, made a batch of experimental plates. The sponsors liked the product and were all set to start competing with Saxony when, as Andrew describes it:

*"A Patent was trumpt up whereby the making of Tinn-plates was granted and the Patentee was countenanced by some persons of Quality: and what with the Patent being in our way and the Richest of our Partners being not willing, or at least affraid, to offend Great men then in power, who had their eye on it, caused the thing to cool and neither the making thereof proceeded by us, nor could possibly be done by him that had the Patent."*

No, Rollo, by no chance could the English "persons of Quality" have had a substantial interest in the Saxon tin plate works.

## Weekly Blurb

**WE had to go all the way back to 1923 to find a March that surpassed last month's total of 356 new subscribers.**

## Bell-Ringer

IF you don't bind your copies of The Iron Age, take a tip from us and clip from the Mar. 29 issue that article "Common Sense Applied to Price Levels" before the copy is mislaid, because it is in heavy demand.

We are deluged with requests for it and compliments on it. The potent New York Herald Tribune made it the subject of its leading Apr. 3 editorial. U. S. Senators and Congressmen laud it. Keep it in your vest pocket for display whenever a foggy-minded but vehement acquaintance gets tangle-footed on the moot question of price movements.

## We Bow to Public Demand

*"I THINK the editorials which our friend Van Deventer has been writing,"* says one of the industry's best-known men, *"are the best that I ever read on the present situation."* So heavy has been the demand for the series of editorials on the danger of labor union domination that we have reprinted them. If you asked for a set we couldn't say no.

—A. H. D.